# AN INNOVATIVE PROTOTYPE FOR HIGHER DENSITY FAMILY ACCOMMODATION

Alberta

MUNICIPAL AFFAIRS
Innovative Housing Grants Program

# AN INNOVATIVE PROTOTYPE FOR HIGHER DENSITY FAMILY ACCOMMODATION

March 1985

Prepared by:

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The views and conclusions expressed and the recommendations made in this report are entirely those of the authors and should not be construed as expressing the opinions of Alberta Municipal Affairs.

ISBN: 0-88654-131-X

# FOREWORD

The project documented in this report received funding under the Innovative Housing Grants Program of the Alberta Department of Housing. In May, 1986 the Alberta Department of Housing was amalgamated with Alberta Municipal Affairs which is now responsible for issuing this report.

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As the type of project and level of resources vary from applicant to applicant, the resulting documents are also varied. Comments and suggestions on this report are welcome. Please send comments or requests for further information to:

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# Acknowledgements

It was the desire of both the authors and the Alberta Department of Housing that there should be input to this study from the development industry, to insure that the product would be realistic in its recommendations and perceived as such by both the private and public sectors.

In this regard, we wish to acknowledge the special contribution of MacLab Enterprises Ltd. and in particular Mr. Pat Whelan and Mr. Ron Bell, for input throughout the study. As well, we thank Mr. Greg Christenson of Chris-Con Builders Ltd., who provided detailed capital cost analyses of the prototypes. Finally, we wish to thank the following people who kindly provided their evaluation of the objectives and conclusions during the course of the study.

Alldritt Development Limited
- Mr. Murray Lind, General Manager

Groveridge Imperial Properties Ltd.
- Mr. Sid Lew, President

Triple Five Corporation
- Mr. Michael Mooney, Director of Development

Urban Management Ltd.
- Mr. Don Horner, President
- Mr. Ken Poholko, Vice-President
- Mr. Jack Peat, Secretary-Treasurer

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# Executive Summary

Most families in Alberta aspire to a single family home. This form of housing best satisfies their living preferences. But many families cannot afford a single family home or even a townhouse, a housing form which also satisfies family living preferences quite well. At the next level of density, which we will call medium density, the most common form of accommodation is the walk-up apartment. However, this housing form is not well suited to families; nor has the building industry been very successful in finding any other medium density form of housing that is practical and suited to family living. Many forms have been tried, including stacked townhousing; nonetheless, the walk-up apartment continues to dominate the field, despite its shortcomings.

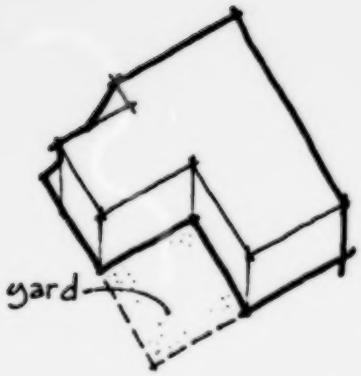
This study seeks a better family housing form. The first objective of the study is to clarify what makes certain housing forms more acceptable to families than other types. The second objective is to then develop and test the viability of an alternate type of medium density housing to better satisfy family living preferences within an economically realistic framework.

Existing housing forms are analyzed to establish what families find desirable about them. Further, a number of major developers and leasing managers were interviewed to gain the benefit of their perceptions on this subject. The conclusions are organized into a set of family living preferences. Then a method is developed for ranking a particular housing project in terms of the degree to which it would satisfy these preferences.

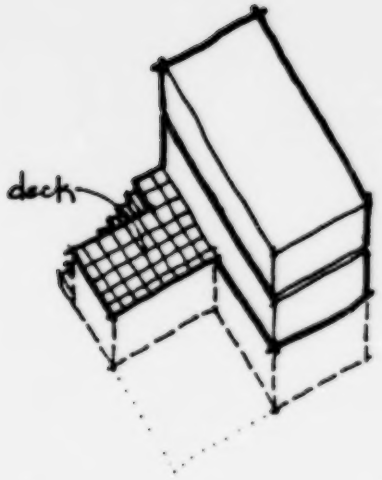
With this information in hand, an alternate medium density housing form is examined and tested, both in terms of satisfaction of these living preferences and financial viability. The results are then tested with five major real estate developers.

When familiy living preferences are examined, the findings point out that a number of them relate primarily to the grouping of units and site planning. As densities are increased, the quality of unit interiors can remain relatively satisfactory but exterior considerations suffer when compared to the single family home.

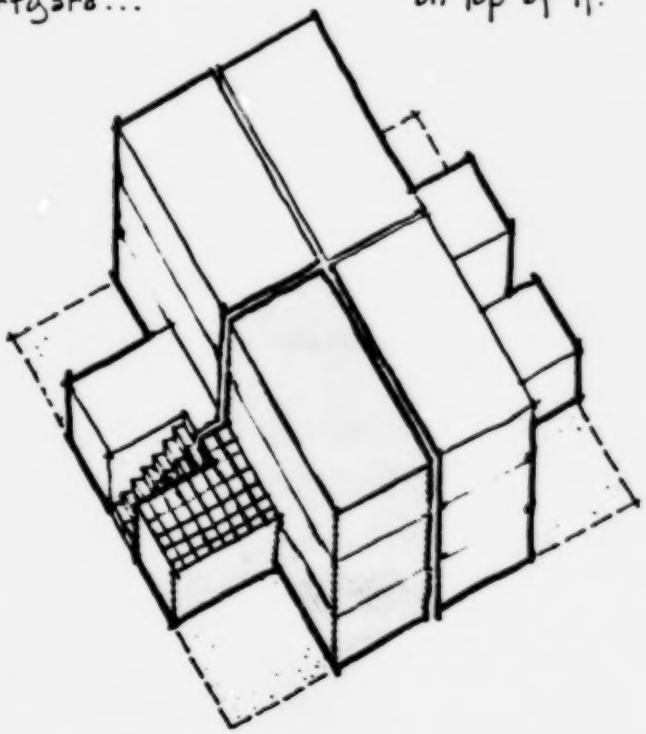
Seven items of family living preferences become more difficult to achieve at medium densities and are not well satisfied in the walk-up apartment. These are:




A one-storey "L" shaped unit on grade, wrapped around a private courtyard...




... has a two-storey townhouse with an outdoor deck stacked on top of it.



These stacked units are grouped back-to-back to create an eight-plex arrangement.

ORGANIZATIONAL CONCEPT OF THE PROTOTYPE DWELLINGS

- an identity to one's own individual home which satisfies our basic desire for self-expression;

- the identity or image of the group of homes in a project which one finds visually pleasing and in which one takes pride when showing it to a visitor;

- a clearly visible front entrance to one's home that is easy for people to find and, again, serves to identify the residence;

- parking that is convenient to the home, both for the resident and visitors, preferably enclosed;

- a yard in which children can play, the family can barbeque, or a person can commune with nature, together with shared open space for contact with neighbors and for group play;

- a sense of privacy, both visual and acoustic, in the home and in one's yard, combined with a sense of security; and

- bright, sunlit rooms and outdoor spaces, particularly these days when so many people enjoy having plants in the home.

The degree to which each of these is satisfied in a particular type of housing is measurable. Section Two of this study documents a method of doing this.

A type of stacked housing, utilizing a terrace form of two storey unit placed above a one storey courthouse, is presented. This duplex in turn groups conveniently into an eight-plex form of multiple housing (see page v). It can achieve densities of 10-12 units/hectare (25-30 units/acre) with surface parking and up to 20 units/hectare (50 units/acre with underground parking.

Upon careful scrutiny, it is found that this housing form provides a relatively high degree of satisfaction in terms of family living preferences, as measured by the method established in the report.

This housing form also stands up to financial scrutiny. While it is slightly more expensive to construct than a walk-up apartment, financial analysis shows that it produces better revenue. In the opinion of a number of major real estate developers and landlords, it also has the added security of an anticipated lower vacancy rate in a depressed market. All in all it is found to be financially viable.

The conclusion is drawn that a form of medium density housing is available that is both better suited to family living than the walk-up apartment and that is financially a viable alternative.

# Section One:
# Introduction

This study seeks a new solution to medium density family housing. There is a place for such housing. The success of the solution will be dependent on a clear definition of the problem. This section addresses these matters and outlines the organization of the report.

## PURPOSE OF THE STUDY

The vast majority of families in Alberta aspire to a single-family home in which to raise their children. This housing form offers a large number of the amenities they desire in their home, their "wish list". For some, however, a detached home is beyond their financial means. Multiple housing forms at lower densities, particularly townhousing, are an option that provides many of the same attributes as single-family housing and at a lower cost, thus broadening the economic range of qualifying families. However, no medium density form of housing, in the range of 25-50 units per acre, has been found which is broadly acceptable, although many types,including stacked townhouses, have been tried.

As a result, we find many families living in apartments that do not provide a level of amenity they need or desire. This study seeks a viable housing form to fill this void.

## THE PLACE FOR MEDIUM DENSITY FAMILY HOUSING

Is there a place for family housing at densities higher than townhousing? A case can be made for it from two perspectives. First, for some families, a central location in the city is well suited to their needs as it provides them with easy access to employment and a wide range of social, recreational, cultural, and commercial services not readily available in the suburbs. However, land values in such areas prohibit lower density housing at modest cost. Only a high density solution is economically practical.

The second perspective relates to people's access to the housing stock financially. If we can provide a residential unit suited to families at a total cost below that of townhousing, we will increase the number of families who can afford such housing without subsidy. We will also reduce the amount of subsidy necessary to assist families of still lower income who are presently accommodated in publicly funded townhomes.

There is also the unmeasured cost benefit of good medium density family housing. Greater density permits a smaller, more compact form of urban environment, resulting in both lower capital and operating costs of delivering public services such as roads, transit, sewer and water services and recreation facilities. This cost benefit is not accounted for in this study but should not go unrecognized.

The illustration on the following page demonstrates the relationship, in terms of density, between various common forms of housing.

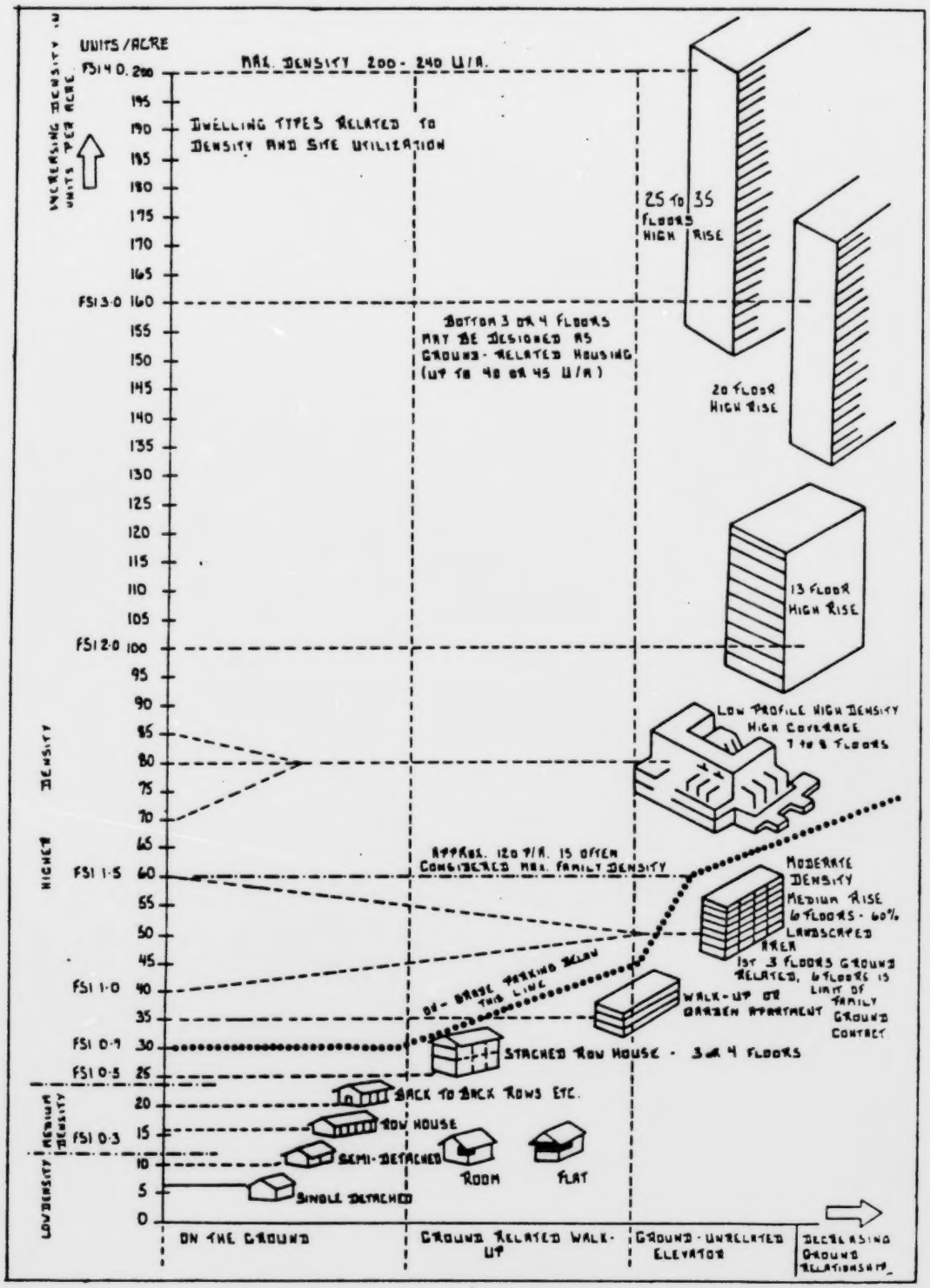

UNITS/ACRE
INCREASING DENSITY IN UNITS PER ACRE
MAX. DENSITY 200 - 240 U/A.
DWELLING TYPES RELATED TO DENSITY AND SITE UTILIZATION
25 TO 35 FLOORS HIGH RISE
BOTTOM 3 OR 4 FLOORS MAY BE DESIGNED AS GROUND-RELATED HOUSING (UP TO 48 OR 45 U/A)
20 FLOOR HIGH RISE
13 FLOOR HIGH RISE
LOW PROFILE HIGH DENSITY HIGH COVERAGE 7 TO 8 FLOORS
APPROX. 120 P/A. IS OFTEN CONSIDERED MAX. FAMILY DENSITY
MODERATE DENSITY MEDIUM RISE 6 FLOORS - 60% LANDSCAPED AREA
1ST 3 FLOORS GROUND RELATED, 6 FLOORS IS LIMIT OF FAMILY GROUND CONTACT
WALK-UP OR GARDEN APARTMENT
STACKED ROW HOUSE - 3 OR 4 FLOORS
BACK TO BACK ROWS ETC.
ROW HOUSE
SEMI-DETACHED
SINGLE DETACHED
ROOM
FLAT
FSI 4.0
FSI 3.0
FSI 2.0
FSI 1.5
FSI 1.0
FSI 0.9
FSI 0.5
FSI 0.3
HIGHER DENSITY
LOW DENSITY
MEDIUM DENSITY
ON THE GROUND
GROUND RELATED WALK-UP
GROUND-UNRELATED ELEVATOR
DECREASING GROUND RELATIONSHIP

Figure 1: "The Interaction of Housing Forms, Density, And Ground Relationships" (from A Background Paper on Community Design by Plantown Consultants Ltd., 1974.)

## THE OBJECTIVES

The objectives, simply stated, are twofold:

(a) To find a housing form, at densities significantly higher than that of townhousing, that addresses the needs and preferences of families better than our conventional medium density forms, such as walk-up apartments.

(b) To provide housing at a cost that makes economic sense in terms of either:

- lowering the floor on the price of housing suited to families or

- providing housing suited to families that is competitive in economic return with other forms of medium density housing, typically walk-up apartments.

Cost will be dependent, among other things, on achieving densities that will reduce land cost per unit below that of a townhouse at a construction cost that will not offset this saving in land cost.

Commonly, in seeking a resolution to the constraints of zoning and the economics of medium density development, family livability and the amenities people value have been neglected. This is true primarily for the amenities outside the unit. Successful solutions to interior layout and features are common at the densities in question. However, in site planning and the grouping of units, people's preferences often are not accommodated. Therefore, this study focuses on this aspect of the subject.

## ORGANIZATION OF REPORT

The study addresses the subject in the following manner:

Section 2: Family Living Preferences

- identifies those festures that a family desires in its housing and ranks various forms of physical product in terms of how well they satisfy these consumer preferences.

Section 3: The Stacked Courtyard Housing Prototype

- examines conventional design solutions and presents an alternate housing form.

Section 4: Financial Feasibility

- examines the financial aspects of this alternate housing form and reviews its marketability.

Section 5: Conclusion

- summarizes the results of this study.

A Bibliography of relevent publications is included. Appendices provide additional support information.

## RELATED INVESTIGATIONS

The authors developed the basic concept of the housing form in a Fesibility Study for residential project being proposed by Alberta Housing Corporation in 1982. Numerous studies and projects built by others have likewise addressed the needs of families at medium density. Some examples are included in the Appendices. However, no one solution has become broadly accepted or built in any real volume in Alberta to date.

## VALIDITY OF THE CONCLUSIONS

It was felt that if the study were limited to the further development of the design concept and the analysis of its technical and financial aspects, it might not be accepted as conclusive. Therefore, the investigations went considerably further. The hypothesis of consumer preferences, the measure of success of the design against these preferences and the financial and market feasibility were all developed with the cooperative input of MacLab Enterprises Ltd., a major Edmonton development company. These were then further assessed by four other major developer/property management companies. The conclusions reached reflect their considered judgement and comments as well as those of the authors.

# Section Two:
# Family Living Preferences

This section analyzes common amenities desired in family housing. Each amenity can be provided to a lesser or greater degree which affects the level of satisfaction. The degree to which they are provided offers a method of ranking the design solutions.

## ELEMENTS OF AMENITY FOR FAMILY ACCOMMODATION

Most medium density housing lacks certain amenities desired by families. What are these amenities that families desire in their housing?

There are seven basic amenities frequently identified by those involved in marketing housing. These are:

(1) Individual Unit Identity
(2) Group Identity
(3) Front Entrance Identity
(4) Parking and Access to the Unit
(5) Outdoor Space
(6) Privacy
(7) Sunlight and Orientation

The single-family detached home generally provides each of these amenities very well. The degree of satisfaction with higher density forms is directly related to how closely they can successfully emulate the typical single family home.

The study examines each of these amenities in some detail and outlines a means of measuring a project's success in achieving each of them. The chapter concludes with an explanation of a method one can use to compare dissimilar housing schemes in terms of their degree of success in providing all of these amenities.

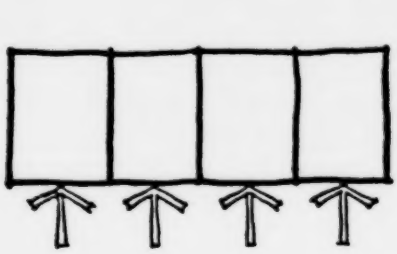
## AMENITY 1: INDIVIDUAL UNIT IDENTITY

*Units can be ranked from best to worst in terms of their individual identity as 1. detached; 2. apparently detached; 3. expressed; 4. cluster; 5. barracks.*

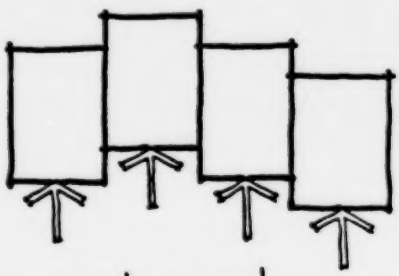
People like to have their possessions identifiable and distinguishable from those of others. Detroit has capitalized on this extensively in selling cars. People have the same needs and desires regarding their homes.

They want a home that is identifiable. Once they have moved in, they begin personalizing it even more. This is most obvious in single-family housing. But is is also true in multiple forms of housing. Even the term "row-housing" has been rejected in marketing because of its connotation of repetition and group.

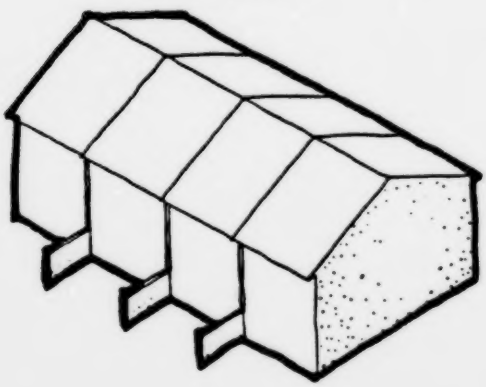
To illustrate this, let us look at two ways of arranging multiple housing.

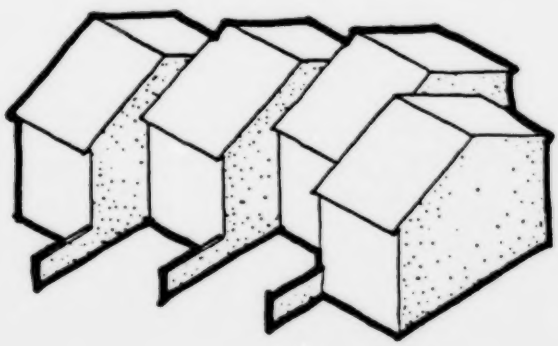


linear



staggered

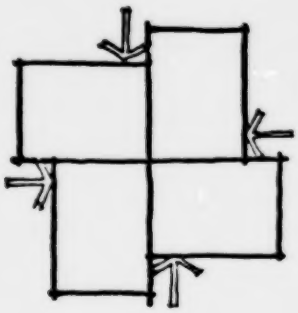


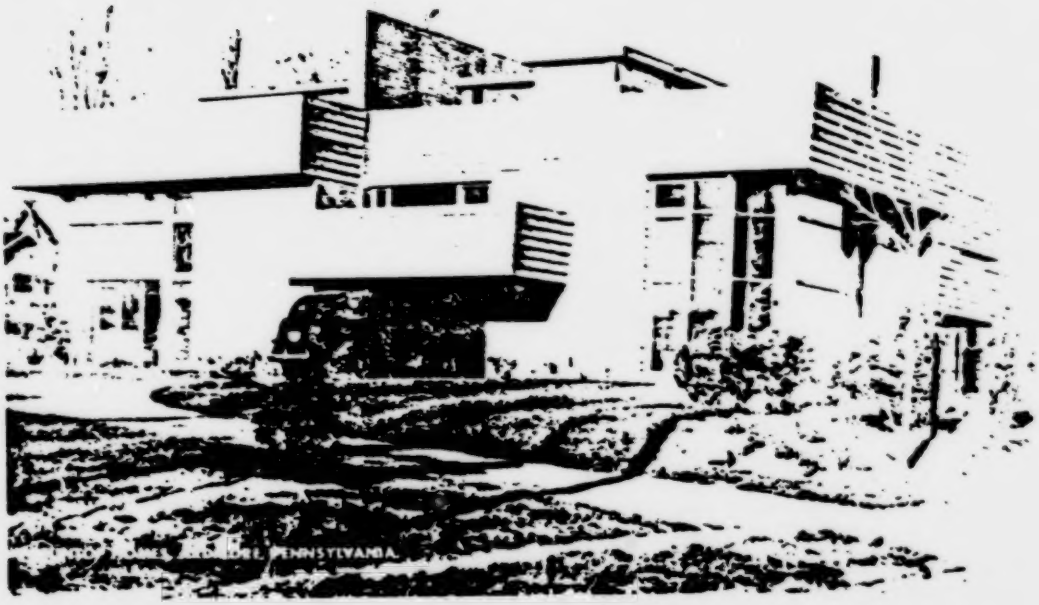


In this example, each unit can be individually distinguished in the second design, whereas in the first only the number of doors gives you a clue as to the number of homes.

If an occupant wants to personalize his home (as is so often the case), he can do this in the latter situation without destroying the design; but in the first design it would conflict with the repetitive rhythm of the facade.

Individual identity can be taken a third step by arranging the units in such a way as to disguise the multiple character of the building and give each unit the image of being the entire building. One example, proposed by Frank Lloyd Wright, has only one entrance on each facade of a quadraplex - from each side, the whole building is perceived as one house.





Exterior View of Frank Lloyd Wright Quadraplex

Thus, units can be ranked by preference as to the individual identity they achieve, as shown in Figure 2, below:

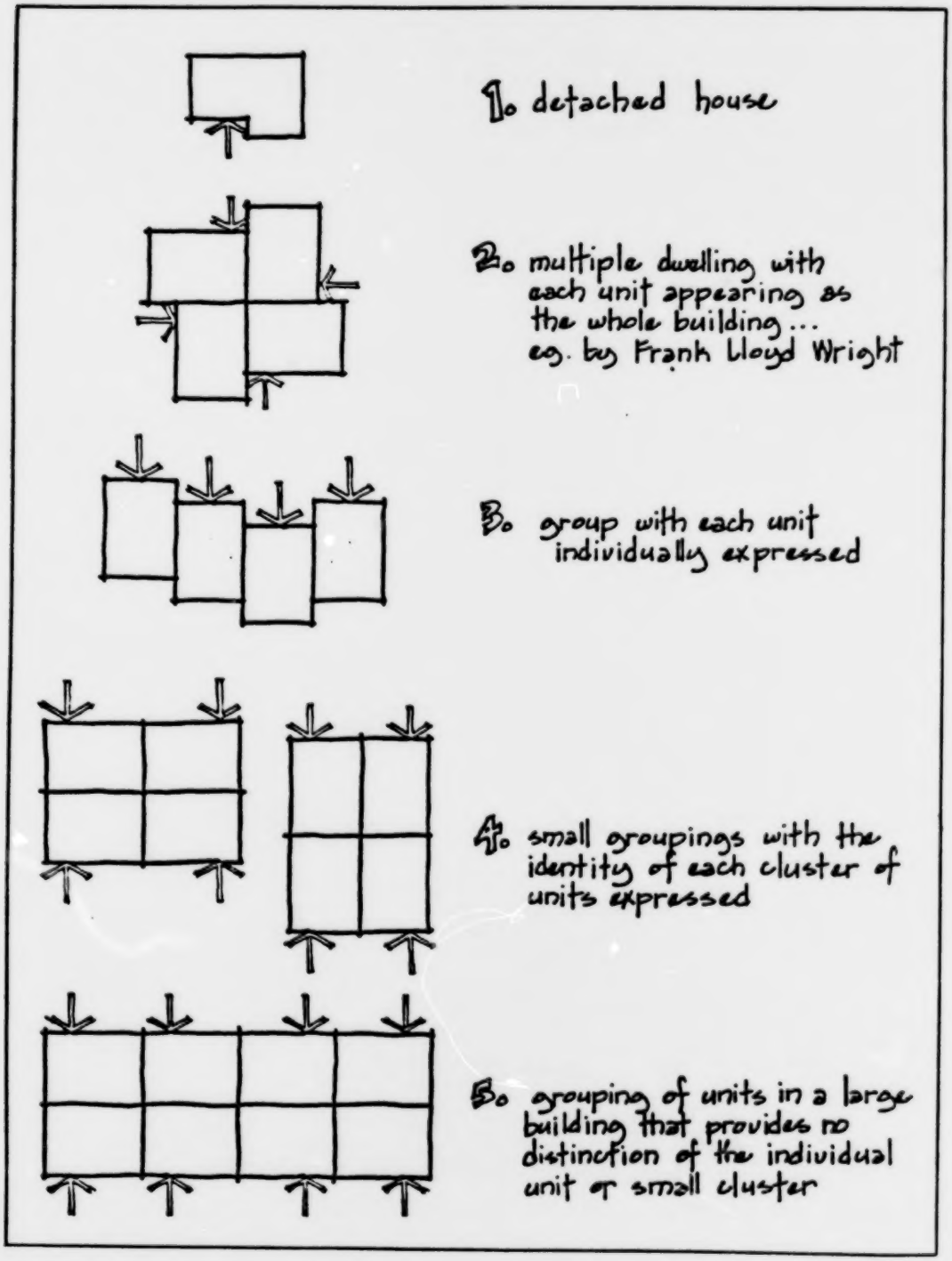

1. detached house
2. multiple dwelling with each unit appearing as the whole building... eg. by Frank Lloyd Wright
3. group with each unit individually expressed
4. small groupings with the identity of each cluster of units expressed
5. grouping of units in a large building that provides no distinction of the individual unit or small cluster

Figure 2: Ranking of Unit Types by Identity Preference

AMENITY 2: GROUP IDENTITY

*Group identity is determined by the number of units in a group, the existence of a heirarchical group structure, and variation from group to group. Projects can be ranked relative to each other in this regard.*

Identity works at a number of scales. Unit identity deals with the scale at which the separation of individual dwelling units provides identity. If, however, all these separate dwelling units are repeated ad nauseum without any breakdown at a secondary and tertiary scale level, identity will be lost. This happens, for example, when single family housing is constructed in vast tracts of identical building lots, such as at Levittown; it is also to a lesser degree the case for multiple housing units at Habitat in Montreal (see illustration, next page). Each unit is separate from the others, and so achieve, for the density, an unusually high degree of identity relative to its immediate neighbors. But the system is extended to such a degree that some of the sense of identity is lost in the proliferation of the design solution. A mega-structure is created in which the image of the whole is so strong that it begins to dominate the identity of the individual unit. The situation would be worse, of course, if the same number of units were treated as barracks without separate identity.

Aerial View of Levittown

Habitat - Individual Identity vs. Group Identity

Success in group identity is partly a product of the total number of units, in that it is easier to achieve a positive identity with a smaller group than with a very large number. However, a balance between cohesiveness and interest through variety is equally important. For example, a small cluster of townhouses stacked in a long row like books is unlikely to be perceived to be as attractive as a larger group where variety is introduced by a sub-grouping. This is illustrated in the example below, where units are grouped into triplex buildings that have individual character in form and color, yet by similarity come together as a cohesive whole. The quality of the design appearance also may evoke a positive or negative reaction to the project image.

Wolf Willow Townhomes - Clusters of Units designed as Single Entities

It has not been possible to define a simple and objectively applicable ranking order that takes these design considerations into account, since they are complex and to some extent subjective. But those factors can be taken that can be measured - the size of unit clusters, the presence or absence of a hierarchy structure in which smaller elements build up to larger ones, and the presence of variation between the sub-groups - and a system developed which gives the highest rank to those projects that obtain all three.

Size

A building, of however many units, should be perceivable as a whole by someone standing on the street. Ideally, this will be about the size of a large house - i.e. a building no more than three storeys high and up to perhaps 18 metres (60 feet) in width.

Hierarchical Structure

The preferred building grouping in a project is one in which the buildings, of a size described above, form a secondary order of group identity, with each group not getting too large, estimated at between 6 and 10 buildings.

Variation

All good architectural design expresses both an underlying discipline of consistency and a variation of expression. A project therefore scores higher if it is not completely repetitive or rigidly laid out. It will score highest if the variations are not arbitrary, but are the result of a response to circumstantial variations within the project and its site, or the result of a consistant design approach, or both.

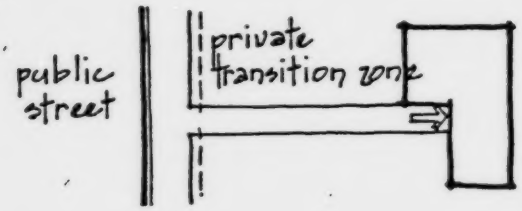
Those projects that can achieve all three receive the highest ranking of 1; those that achieve none receive the lowest ranking of 4.

AMENITY 3: FRONT ENTRANCE IDENTITY

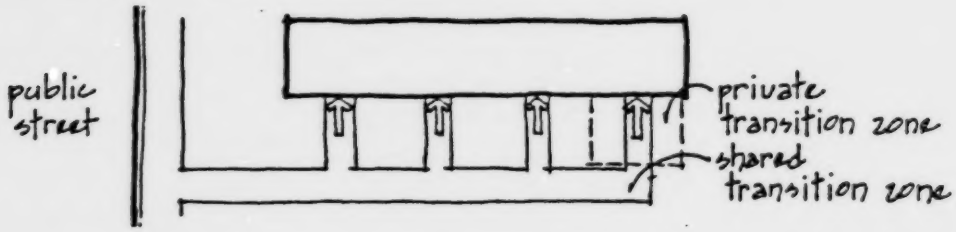
*In terms of the achievement of entry identity, the front entrances can be ranked on the basis of: 1. private access to a visible private entrance; 2. private at grade access from a shared walkway; 3. private off-grade access from a shared walkway; 4. shared off-grade exterior access to a visible entrance; or 5. shared access to an interior or concealed entrance.*

The degree to which the unit entrance to a home is identifiable from the public domain, and the degree to which the approach is private or shared greatly affects the perceived amenity level, as does the degree to which it is separated from grade.

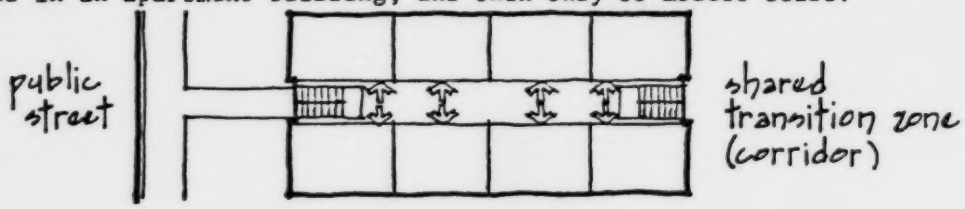
The entrance to a single family home presents a clear identity to the public domain. The access to it is through a private walk or "transition zone", at grade.




When the view of the entrance is more restricted and/or the transition zone is shared for part of its length, as in many multiple projects, the amenity level is reduced.




In an apartment, the amenity level is severely compromised with the unit entrance being completely hidden from exterior view and the shared transition zone continuing inside the building, usually right to the door of the individual unit. A private transition zone is seldom provided in an apartment building, and then only of modest scale.



Stairs further compromise the amenity level of the entrance sequence. However, exterior stairs, particularly if exclusive to the unit, seem to be preferred, perhaps because one can comprehend the entire route to the front door from the outset. A good example of this is the "Coach Home" popularized by Groveridge Imperial Development Ltd. Walkways are shared, but each unit, including upper units, has a significant private transition zone leading to the front entrance.

The amenity levels of various forms of entrance are ranked here by occupant preference.

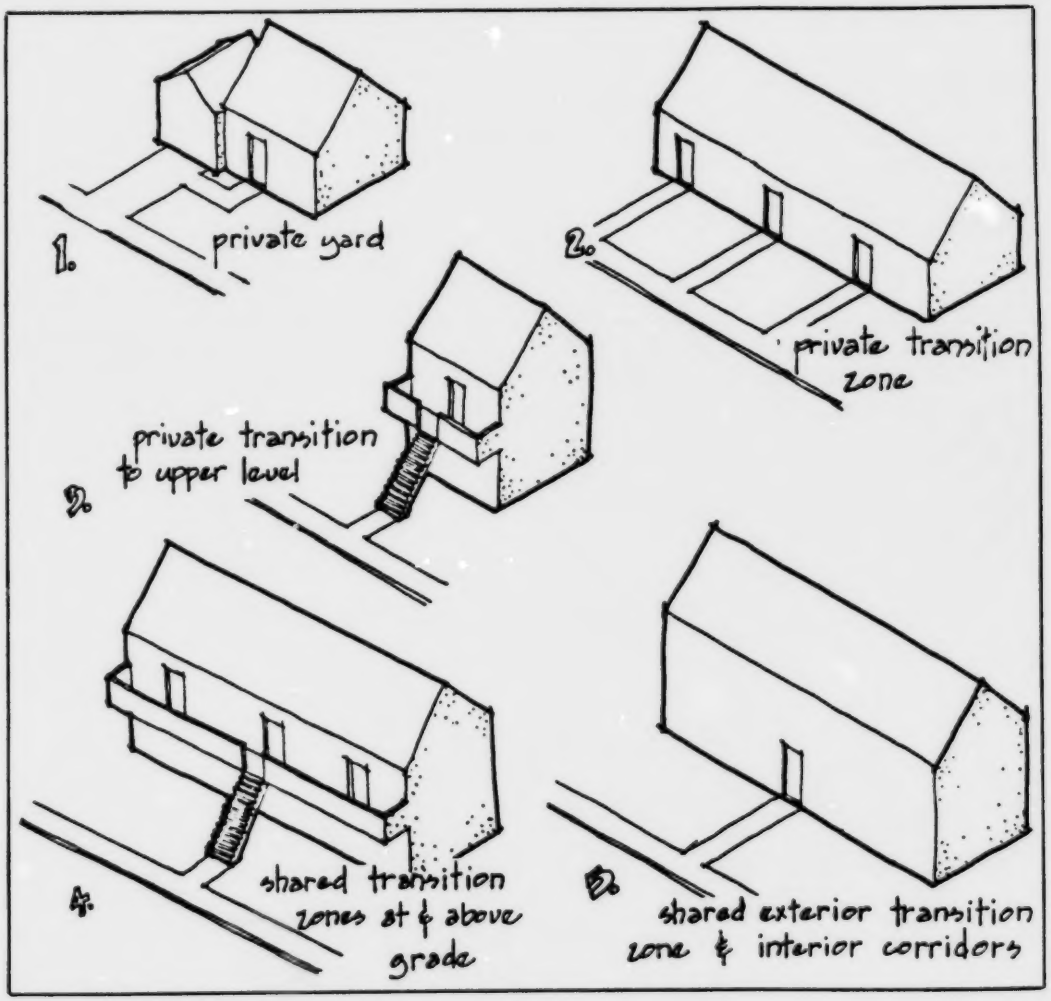



Figure 3: Front Entrances Ranked by Preference

Apartment entrances achieve the lowest level of satisfaction, at 5. Stacked townhousing is usually at level 4. Townhouses are usually at level 2, although occasionally achieve level 1. The entrance for medium density family housing must achieve a ranking of 2 or 3 in order to be superior to apartments.

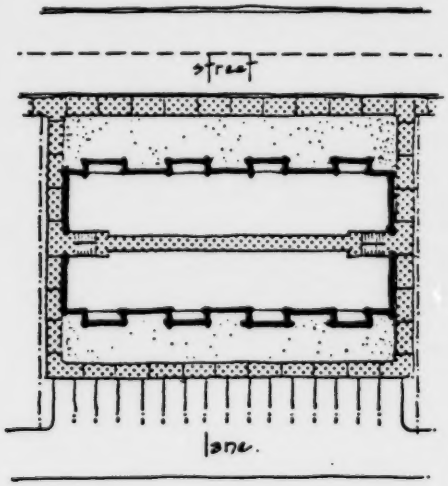
AMENITY 4: PARKING AND ACCESS TO THE UNIT

*Parking and access from parking to dwelling can be ranked in terms of privacy of the parking space, and privacy and convenience of access from parking to dwelling.*

In considering this item, we must look at several aspects. First is storage of the car. Is it enclosed or open? Is it private or in a shared storage area, which increases concerns for security. Is access from the car storage to the unit enclosed or not, and is it private or shared? Finally, but usually of less concern, how is parking and access to the unit for visitors dealt with?

The single family home provides three options, listed in order of preference:

The walk-up apartment typically has surface parking off the lane with shared access to the building.




In multiple housing these same three options are available but with varying degrees of privacy or sharing of the parking and access to the unit. In the following table, we can see the options generally available.

| Functional Arrangement | Detailed Option | HOUSING FORMS | | | | |
|---|---|---|---|---|---|---|
| | | Single Family | Townhouse | Stacked Townhouse | Walk-up Apartment | High-rise Apartment |
| A. Private access from private parking | 1. Private attached garage | * | * | | | |
| | 2. Private detached garage | * | * | | | |
| | 3. Surface parking | * | * | | | |
| | | | | | | |
| B. Shared access from private garage | 4. Interior access | | * | * | * | |
| | 5. Exterior access | | * | * | * | |
| | | | | | | |
| C. Shared access from shared parking | 6. Interior access from garage | | * | * | * | * |
| | 7. Exterior access from garage | | * | * | * | * |
| | 8. Exterior access from surface parking | | * | * | * | * |

Figure 4: Parking and Unit Access Ranked by Preference

It can be seen that every parking access option is available in townhousing, although option No. 8 is by far the most common. Conversely, in stacked townhouses and apartments, a Category A solution is not practical and, in highrise apartments, Category B is also not practical. Walk-up apartments generally employ option No. 8 and high density apartments option No. 6. In a medium density solution, the challenge is to develop as high ranking a solution as possible. Anything better than No. 8 is superior to the majority of townhousing and medium density apartments (walk-ups).

AMENITY 5: OUTDOOR SPACE

*Outdoor space can be ranked in terms of amenity according to the number of spaces available, the size and shape of these spaces, their relationship to the functions within the unit, and closeness to grade.*

The family needs a hierarchy of exterior spaces, private and communal, to accommodate the leisure activities of both adults and children. "In the physical environment fit for man to live in, in the fullest sense, humanity must be able to see, touch, smell and hear other forms of life. The real pleasure of the earth, the weather, the scent of plants, and the songs of birds and insects, cannot be enjoyed except through unhurried contact . . . All this demands dwellings close to the ground with easy access to outdoors, an organic whole in which indoors and outdoors are integrated in a single comprehensive shelter".[1]

For a unit at grade, Canada Mortgage and Housing Corporation standards call for an outdoor living area of one-half the floor area, with access which does not have to pass through the main living area of the unit. Lower standards are permitted for units above grade, although occupants' functional needs obviously do not change. The small apartment balcony clearly does not fulfil family needs for a private outdoor space.

Equally, apartment buildings may be set in a large landscaped area but the physical use of this communal space is usually minimal. It is not large enough to serve as a space for communal activity, and not intimate enough to afford the pleasure of a small garden. "Everything belongs to everyone with the result that nothing actually belongs to or is enjoyed by anybody".[2]

People desire the amenity level of the yard associated with the single-family home. To achieve higher densities, the most dispensible element is the public or front yard. But people require a private yard and space for communal contact and children's play. Ideally, direct access should exist between these areas. Some would argue that a completely private yard, accessible only through the dwelling, is ideal but the former is generally preferred in Alberta.

People also prefer a yard at ground level. They have greater opportunity to landscape the yard. Safety, particularly with small children, is also a factor. However, it should be noted that the experience of Groveridge Imperial Developments Ltd. with 'Coach Homes' is that some people prefer the upper deck, which in their designs has greater privacy.

Figure 5 illustrates the levels of amenity of outdoor space

[1]Chermayeff & Alexander, Community and Privacy, Doubleday & Co., P. 62
[2]Chermayeff & Alexander, Community and Privacy, Doubleday & Co., P. 66

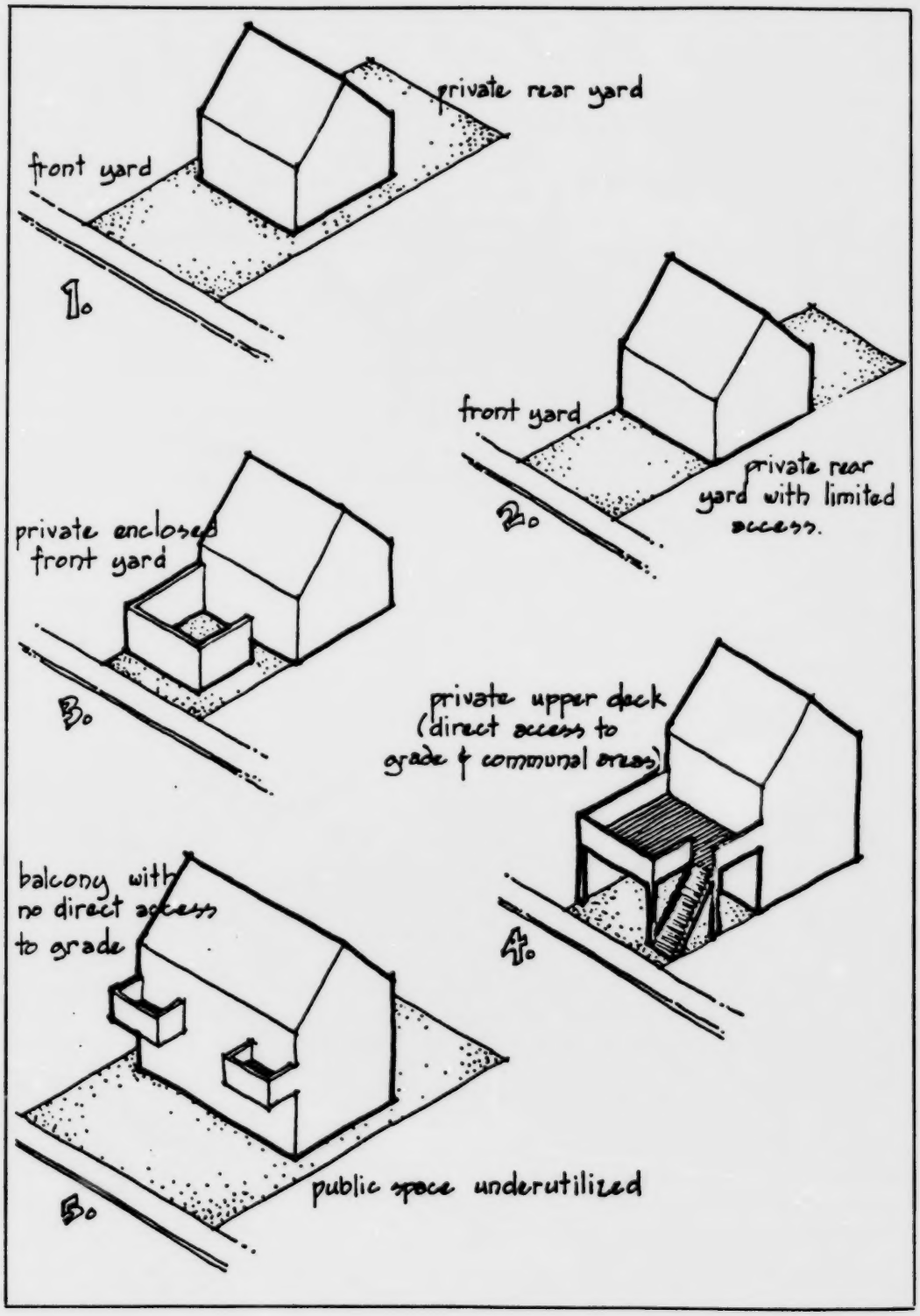



Figure 5: Outdoor Space Amenity Ranking

AMENITY 6: PRIVACY

*Unit and yard can be ranked in terms of privacy by the number of units abutting or overviewing each dwelling/yard and the percentage of dwelling/yard perimeter shared by neighbors.*

As housing density increases, provision of privacy becomes more challenging. But "What was once a commonplace - the possibility of escape from the crowd for privacy and rest - has all but vanished".[3] "The dwelling is the little environment into which all the stresses and strains of the large world are today intruding, in one way or another, ever more deeply".[4]

A most important aspect of privacy is acoustic separation between units. In multiple residential units, the degree of separation is principally dependent on the type of construction employed. The higher the standards, however, the greater the cost and for this reason lower cost housing usually employs the lowest acceptable standards. However, the acoustic separation of a unit is not only dependent on the type of construction. The form of grouping is also an influence. We can rank this by recognizing (a) the percentage of the shell or total wall area of the unit that is common with a neighbor and (b) the number of neighbors. Obviously, the more there are, the more likely of having one who is noisy.

Visual privacy within the unit is normally inversely related to density. The feeling of security is, in part, directly related to the sense of visual privacy. As density increases and units are grouped closer together, the feeling of privacy decreases. An exception to this is the courthouse, where the rooms look onto a court that is private In this case, the building form helps to overcome the disadvantage of increased density. In contrast, the standard form of walk-up apartment has the lower floor with windows at grade. This produces a loss of privacy and security. Developers have found that for this reason, women living alone hesitate to rent these suites. Therefore, visual privacy depends on how close to grade windows are and whether they look onto a public or private zone. Visual privacy in the private outdoor space is more difficult to achieve but should also be optimized. Overview occurs in almost all cases where the building form is higher than one storey. One way of rating visual privacy in the private outdoor space is to count the number of neighboring units that have an overview of the dwelling and this space. The potential for neighboring noises invading the privacy of this space would also be proportional to the number of abutting neighbors.

[3]Chermayeff & Alexander, Community and Privacy, Doubleday & Company, Inc., P. 74.
[4]Chermayeff & Alexander, Community and Privacy, Doubleday & Company, Inc., P. 37.

It can be seen that the building form can influence the level of amenity in terms of acoustic separation between units and visual privacy in the unit and private yard. The following is a simple ranking of various types of units in terms of privacy.

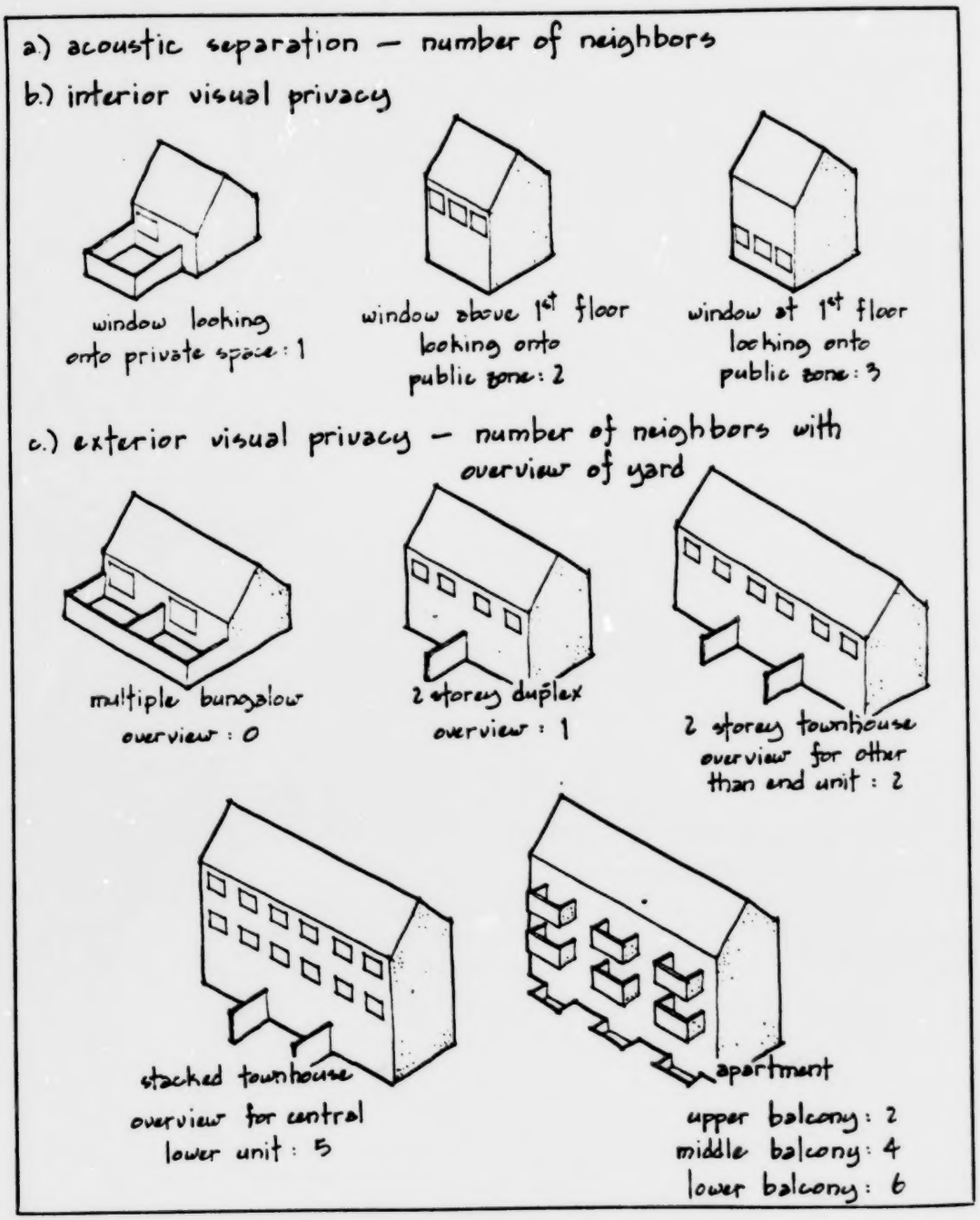

a) acoustic separation — number of neighbors
b.) interior visual privacy
window looking onto private space : 1
window above 1st floor looking onto public zone : 2
window at 1st floor looking onto public zone : 3
c.) exterior visual privacy — number of neighbors with overview of yard
multiple bungalow overview : 0
2 storey duplex overview : 1
2 storey townhouse overview for other than end unit : 2
stacked townhouse overview for central lower unit : 5
apartment
upper balcony : 2
middle balcony : 4
lower balcony : 6

Figure 6: Unit Ranking for Privacy

AMENITY 7: SUNLIGHT AND ORIENTATION

*Rooms with good natural light are desired by residents; furthermore, dwellings with several orientation options are preferred to those with fewer.*

Sunlight is greatly desired. Everyone prefers to have natural light in a room during the day rather than have an interior room with no windows. Therefore, a design can have an amenity rating in terms of the number of habitable rooms without natural light. The greater the number of these rooms, the lower will be the level of amenity and therefore resident acceptance.

Secondly, orientation is an amenity which, while of lower priority generally than the others listed, nonetheless does influence choice of dwelling in some situations. Most people prefer south and west orientations, particularly those who like to grow plants. North facing units usually rent or sell last, other things being equal, or are offered at a discount to make them equally attractive. However, there are a few who prefer this orientation to avoid the heat of the summer sun. Therefore, this is a subjective issue, but on average it counts against north orienting units.

One objective way of comparing different designs in terms of this issue is to establish the number of orientations that a unit has. The benefit in having more than one orientation lies in greater exposure to light and the opportunity for cross ventilation. Therefore, amenity level can be said to increase in direct proportion to the number of exterior orientations of the unit. For instance, the townhouse or corner apartment with two orientations is better than an apartment facing only one way.

These two considerations can be evaluated as follows:

(a) Number of habitable rooms without natural light or a view outside: _____

(b) Number of orientations:
(4 directions = 1;
3 directions = 2;
2 directions = 3;
1 direction = 4;) _____

TOTAL DEMERITS FOR SUNLIGHT/ ORIENTATION _____

Figure 7: System of Ranking for Sunlight and Orientation

## CONCLUSION

*Different forms of accommodation satisfy family living preferences to varying degrees. These forms of accommodation can be ranked, using a system based on the degree to which they provide desired amenities. The system outlined here gives a higher ranking for that which has fewer demerits. In other words, the lowest total score is the preferred form of accommodation.*

| FAMILY LIVING PREFERENCES SCORE RE: | Demerits |
|---|---|
| 1. Individual Unit Identity | |
| 2. Group Identity | _____ |
| 3. Front Entrance Identity | _____ |
| 4. Parking and Access to the Unit | _____ |
| 5. Outdoor Space | _____ |
| 6. Privacy | _____ |
| a) acoustic separation | |
| b) interior visual privacy | _____ |
| c) visual privacy outdoors | _____ |
| 7. Rooms without Windows | _____ |
| Orientation | _____ |
| | _____ |
| TOTAL | _____ |

Figure 8: Ranking of Different Design Solutions by Family Living Preferences

# Section Three:

# The Stacked Courtyard Housing Prototype

This section presents the design of a stacked multiple family housing form of three stories that incorporates private courtyards. With underground parking and with efficient site planning, it can potentially reach densities of 125 units per hectare (50 units per acre). Alternately, with surface parking it will yield densities in the range of 50 to 75 units per hectare (25 to 30 units per acre).

The design is presented in terms of the family living preferences discussed in Section Two, beginning with the issue of unit identity. The prototype is capable of numerous manifestations in terms of dimensions, planning layout, and architectural design. Some of these are discussed. The section concludes with a demonstration of designs for two specific sites which impose dimensional constraints on the prototype.

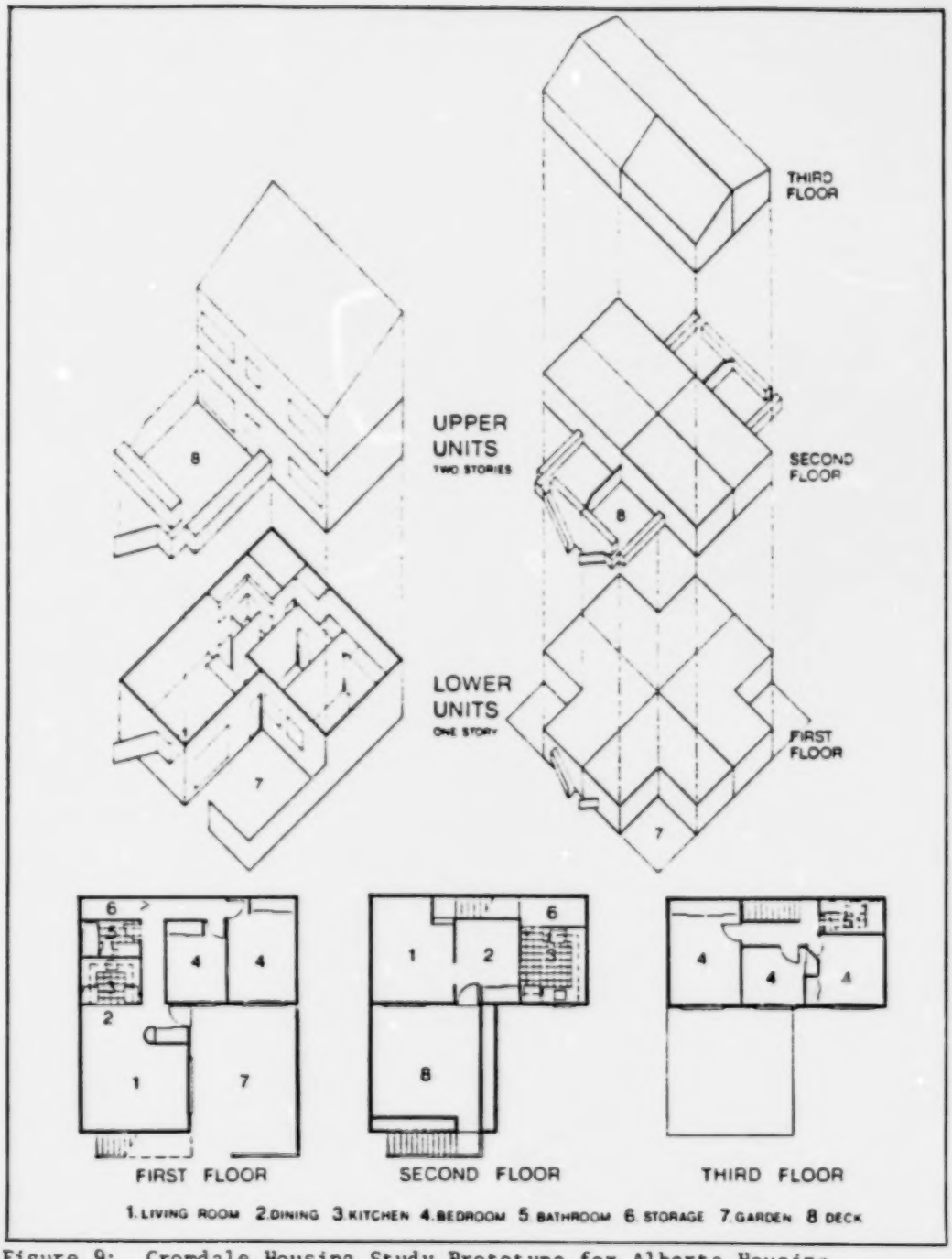



Figure 9: Cromdale Housing Study Prototype for Alberta Housing Corporation

THE ORGANIZATIONAL CONCEPT OF THE DWELLINGS

The basic idea behind the design is to place an "L" shaped house on grade wrapped around it's own private courtyard, with a two-storey townhouse stacked on top of it. This upper unit utilizes the roof of one arm of the lower "L" unit as a generous deck-yard and means of access. Four of these stacked units are then placed back to back. The resulting eightplex can be treated as an individual building, put together in pairs to form a larger building, or strung together in longer terraces.

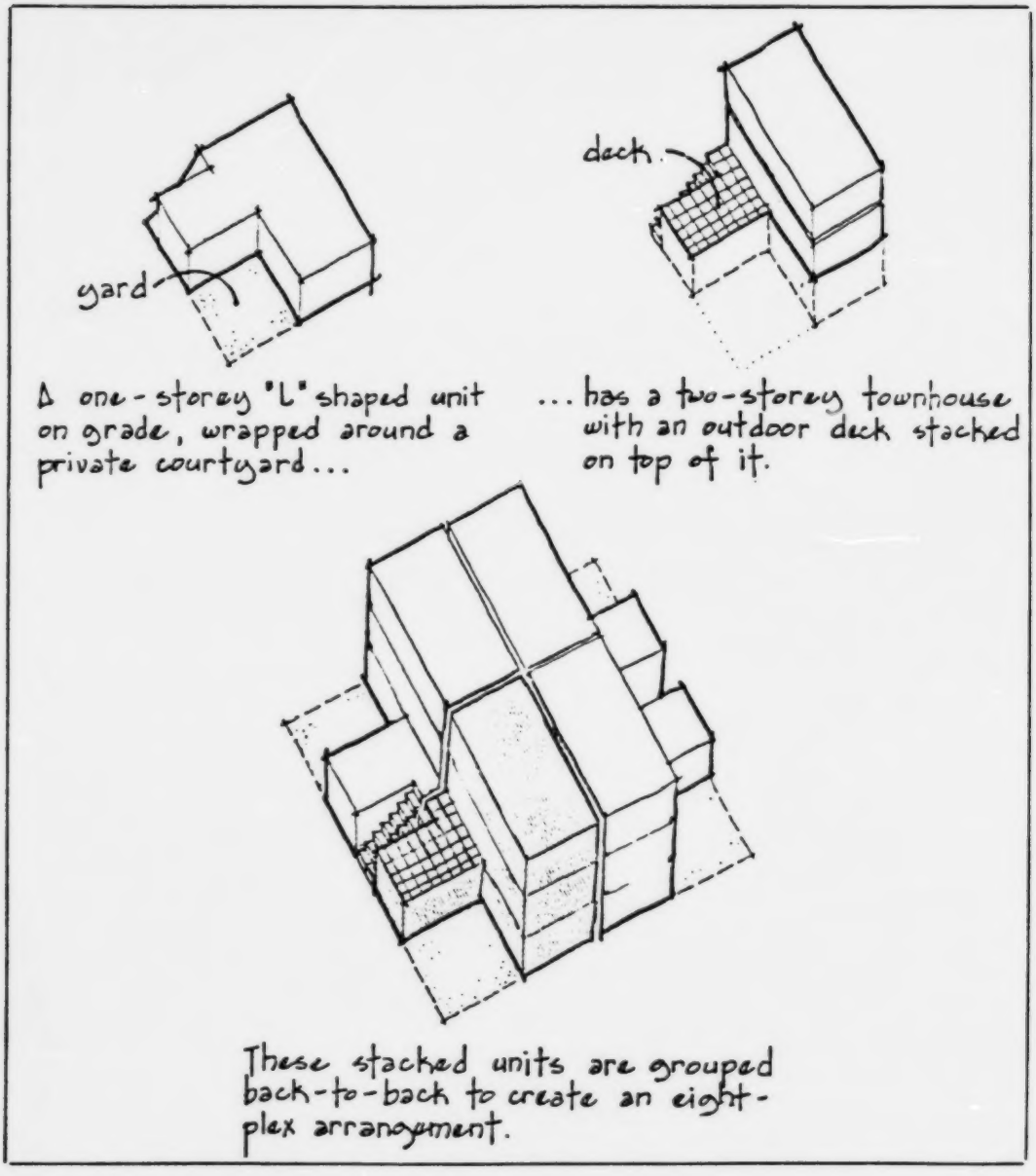
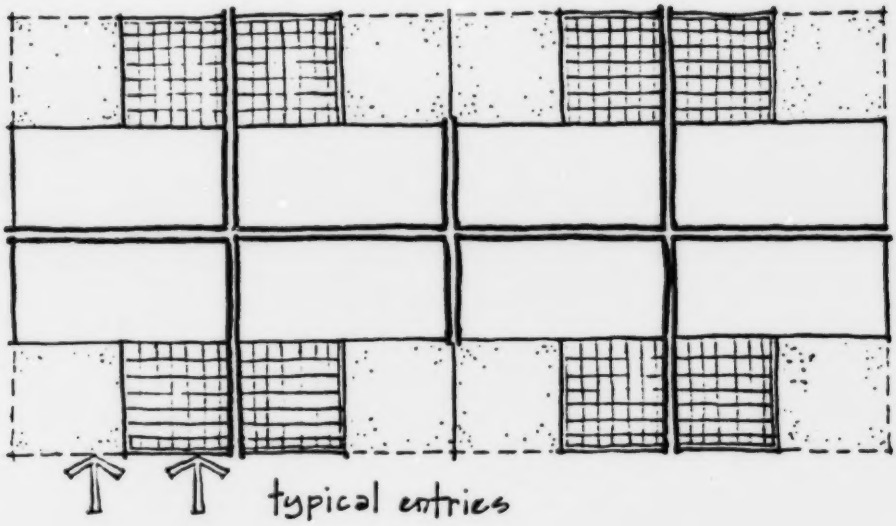

yard
deck
A one-storey "L" shaped unit on grade, wrapped around a private courtyard...
... has a two-storey townhouse with an outdoor deck stacked on top of it.
These stacked units are grouped back-to-back to create an eightplex arrangement.

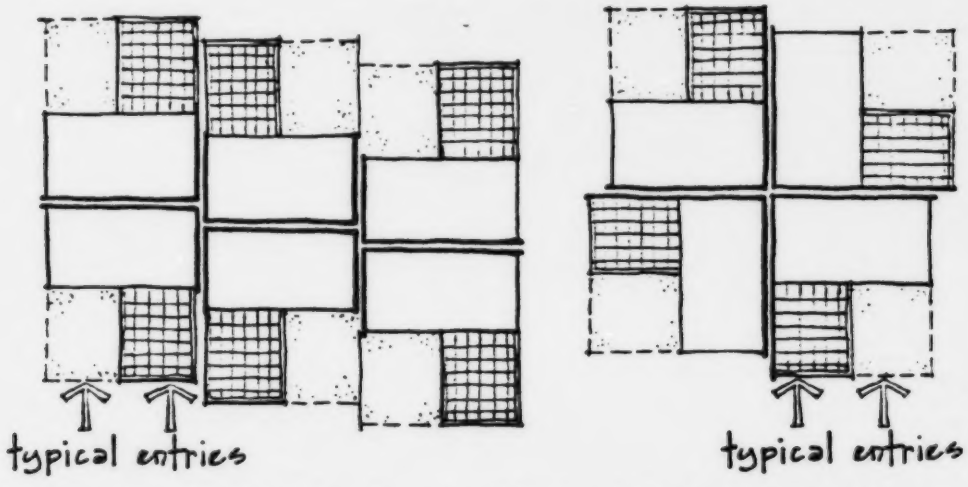
Figure 10: Organizational Concept of the Prototype Dwellings

UNIT IDENTITY

Each unit obtains its identity to a large extent through the image of its large private outdoor space, which also acts as a transition zone from the public domain to the dwelling. In this respect it is superior to stacked townhousing or walk-up apartments, with which it must be compared. Strong expression of the front entrance reinforces this, as will be seen.




In the terrace form, shown above, the design has an inherent staggering effect in which pairs of units are separated from other pairs by the courtyards. A further staggering can of course be achieved simply by sliding one group of units relative to the other (see below).




The "pinwheel quadraplex" is also possible in which further distinction between units and separation of entries can be achieved. This would come close to a level 2 ranking of preferences.

GROUP IDENTITY

The prototype has the potential of having a group identity at the eightplex scale, and of course separate eightplexes within a given project can exhibit various differences in designs. Alternately, the sixteenplex can be the basic siting module, with variety from one to another of these. Such variation can be accomplished by modifications in the massing, fenestration treatment, and color scheme of each building.

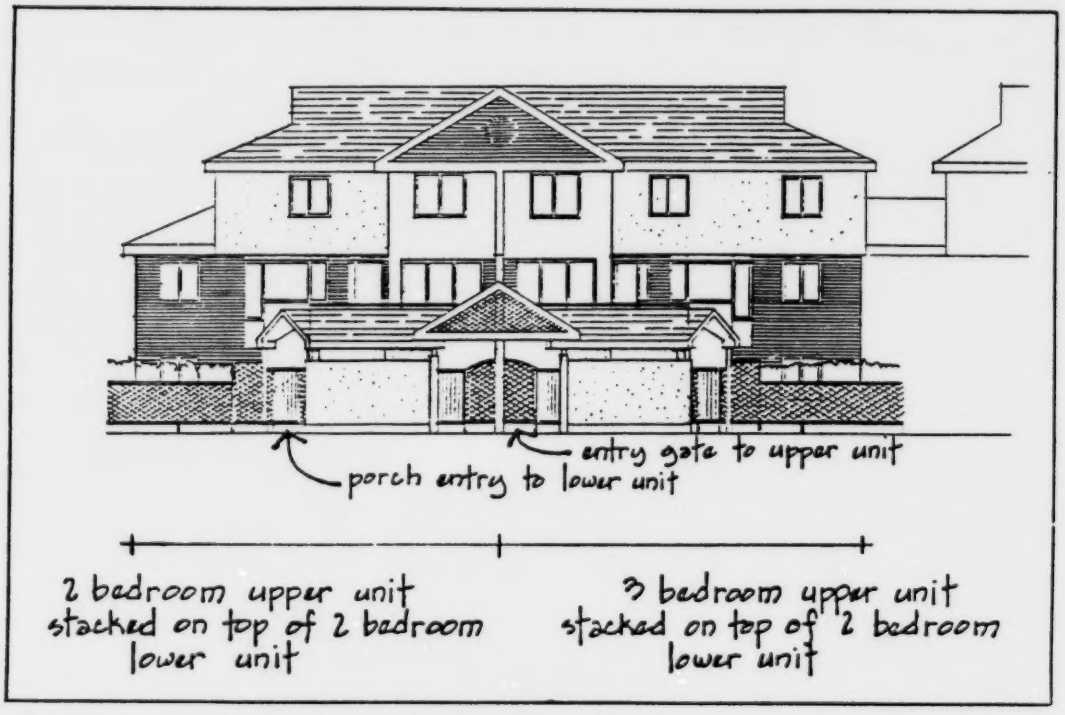

entry gate to upper unit
porch entry to lower unit
2 bedroom upper unit stacked on top of 2 bedroom lower unit
3 bedroom upper unit stacked on top of 2 bedroom lower unit

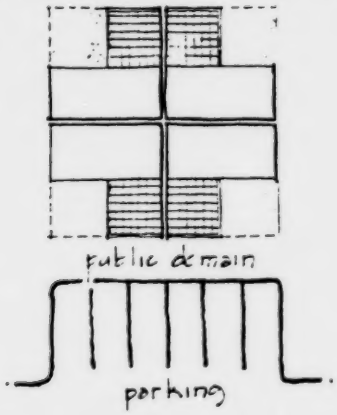
Figure 11: Building Elevation of an Eight-plex

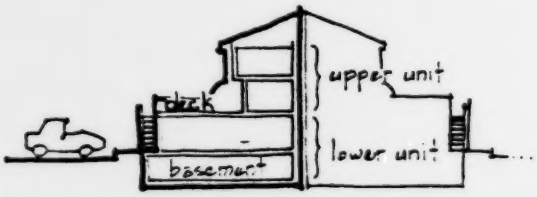
FRONT ENTRANCE IDENTITY

The access to each unit is clearly visible. It thus achieves the strong address identity of the single family home. As can be seen from the elevation design, lower units have a porch clearly identifying their location. Upper units are announced at grade by a gate and pediment above that leads to stairs to the upper deck and entrance to the unit. This achieves a level 2 ranking for the lower unit entrance and a level 3 ranking for the upper unit, the most that seems reasonable to expect.

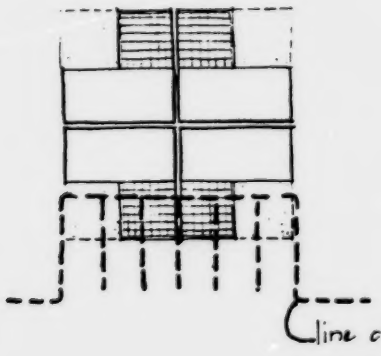
PARKING AND ACCESS TO THE UNIT

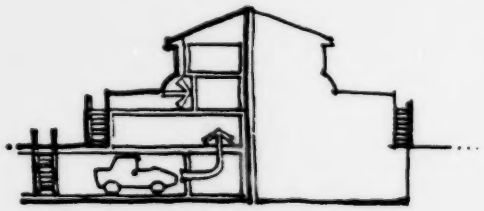
The prototype is planned with either surface parking or a below-grade parking garage. A parking deck solution was considered but not pursued as it was not favored by several developers.[1] Vehicle storage is organized as close to the unit as possible. For the site plan with surface parking, this is directly in front of the units. It would actually be feasible to design attached parking garages, providing a level 1 ranking to lower units and level 2 for upper units. However, for reasons of economy, surface parking is provided. While it is a ranking of 8, proximity offsets this somewhat.




For a higher density solution, parking must be stacked. The method employed is parking in a basement garage, providing better security than other options, as recommended by developers. Direct access is gained from the parking into the basement of lower units, which is a number 1 ranking. Similar access could be gained for upper units but it would involve two direct flights of stairs and incur the cost of considerable additional interior space. Therefore, it was decided to provide public stairs from the garage level to the exterior walkways and then have people use their front stairs to their yard and unit.



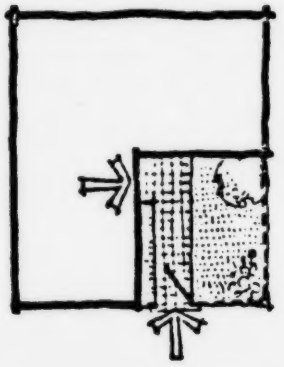



[1] Concerns for security and snow clearing, particularily on the lower level of parking decks, combined with their negative visual impact, were all factors in the decision not to pursue this option.

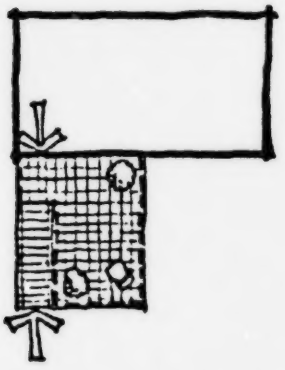
OUTDOOR SPACE

Each unit has a good sized outdoor space accessible both from the unit and from the public open area, permitting children's play to extend from one to the other. Interior living spaces look out and open directly onto it. The yard of the lower unit permits gardening in the solution that does not include underground parking. All other situations permit landscaping in planters.

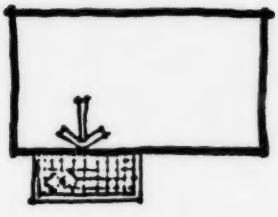
The outdoor space of the lower unit would have a ranking of 3 and the upper space a 4. In contrast, the outdoor area of the upper unit in stacked townhouses or an apartment would be 5.



lower unit yard



upper unit deck

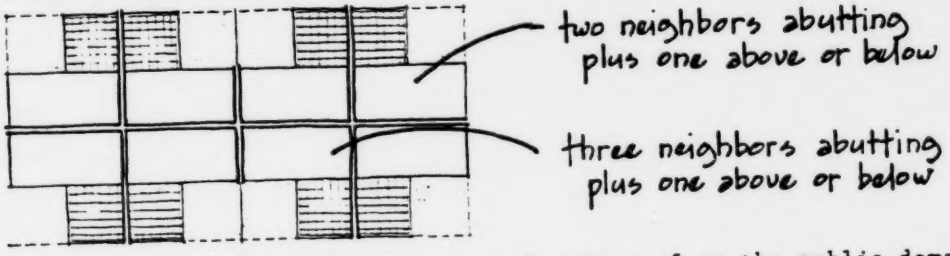


apartment balcony

Communal public space is provided in a central open area containing children's play facilities.

PRIVACY

The eight-plex form of housing proposed dictates that there will be two neighbors abutting a unit. Where several eight-plexes are combined, the interior units have one additional neighbor. This compares with three neighbors sharing common walls or floor for stacked townhouses, and three or four in a walk-up apartment, depending upon which floor the unit is on. Therefore, in this regard, the prototype is comparable to conventional forms.




For both upper and lower units, visual privacy from the public domain has been maximized in both the unit and yard. This is superior to other forms of multiple housing. There is therefore also a high degree of security. The only real concern might be an intruder lurking in a private yard. This can be minimized by simple mechanical devices to ensure that gate access to a deck is lockable and can be opened electronically from within the unit, if so desired.

Overview from one yard or unit to another can be minimized by design, ensuring no worse a situation than in townhouses.

SUNLIGHT AND ORIENTATION

Every habitable room has a window in both upper and lower units except the lower unit kitchen. To compensate, it is designed to have a view across the dining/living space to the courtyard. Bathrooms of course do not have a window. The upper unit would therefore be superior to most multiple units and the lower unit at least comparable.

Regarding orientation, all lower units have two, while upper ones have one minimum and the potential for a second where they are on the end of a building. This is comparable with most other multiple forms.

## THE PROTOTYPE ON SPECIFIC SITES

In the Elmwood Community of Edmonton, near West Edmonton Mall, there is a large, low density multiple family housing project built many years ago by MacLab Enterprises Ltd. (See site location map below). Redevelopment is now appropriate. It is the authors' view that at least part of the lands would be ideally suited to medium density family housing. Two likely sites were selected, as shown. Schemes are illustrated on the following pages for each site, incorporating surface parking on Site A and underground parking on Site B.

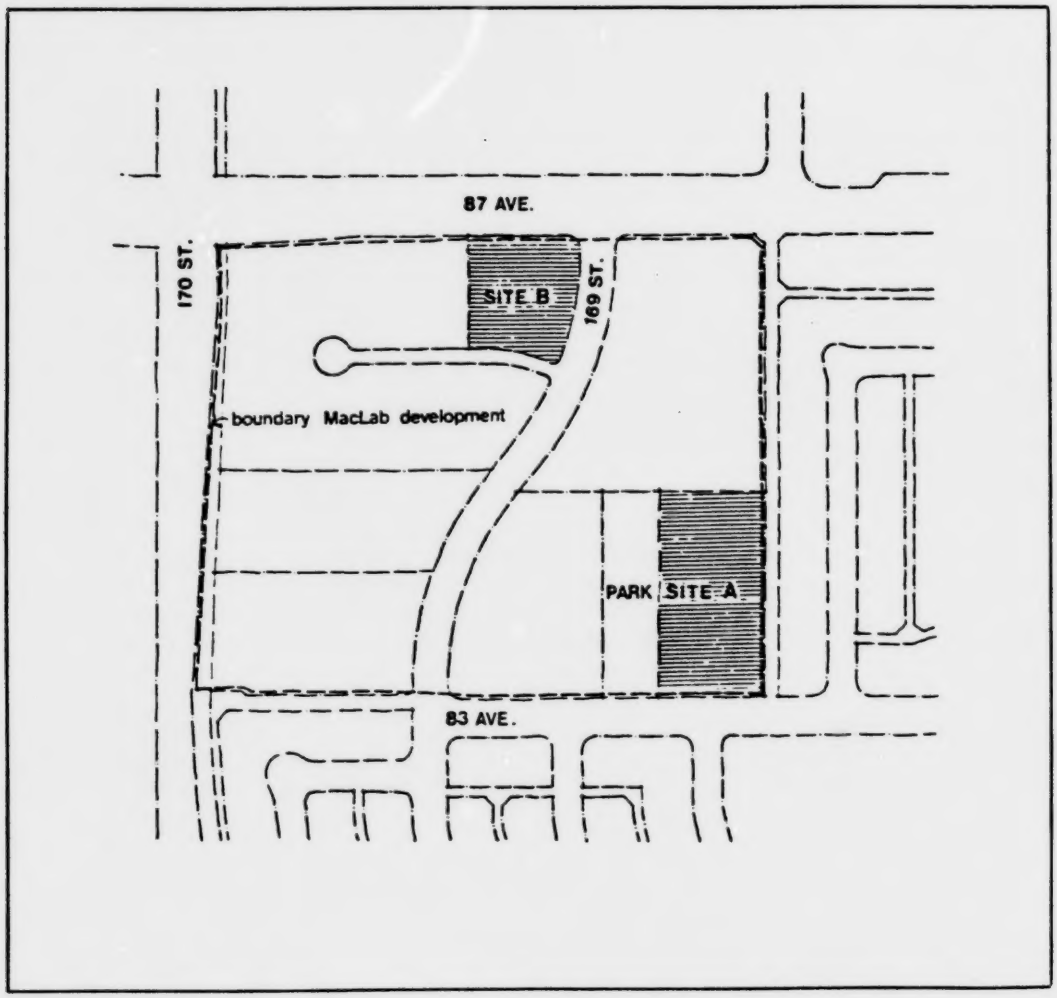



Figure 12: Sites Selected for Prototype Projects

On Site A (1.058/ha.) which borders existing single family homes, 72 units have been accommodated with surface parking and on-site communal recreation space, at a density of 68.1 units/ha. (27.5 units/acre). Figures 13-17 illustrate this.

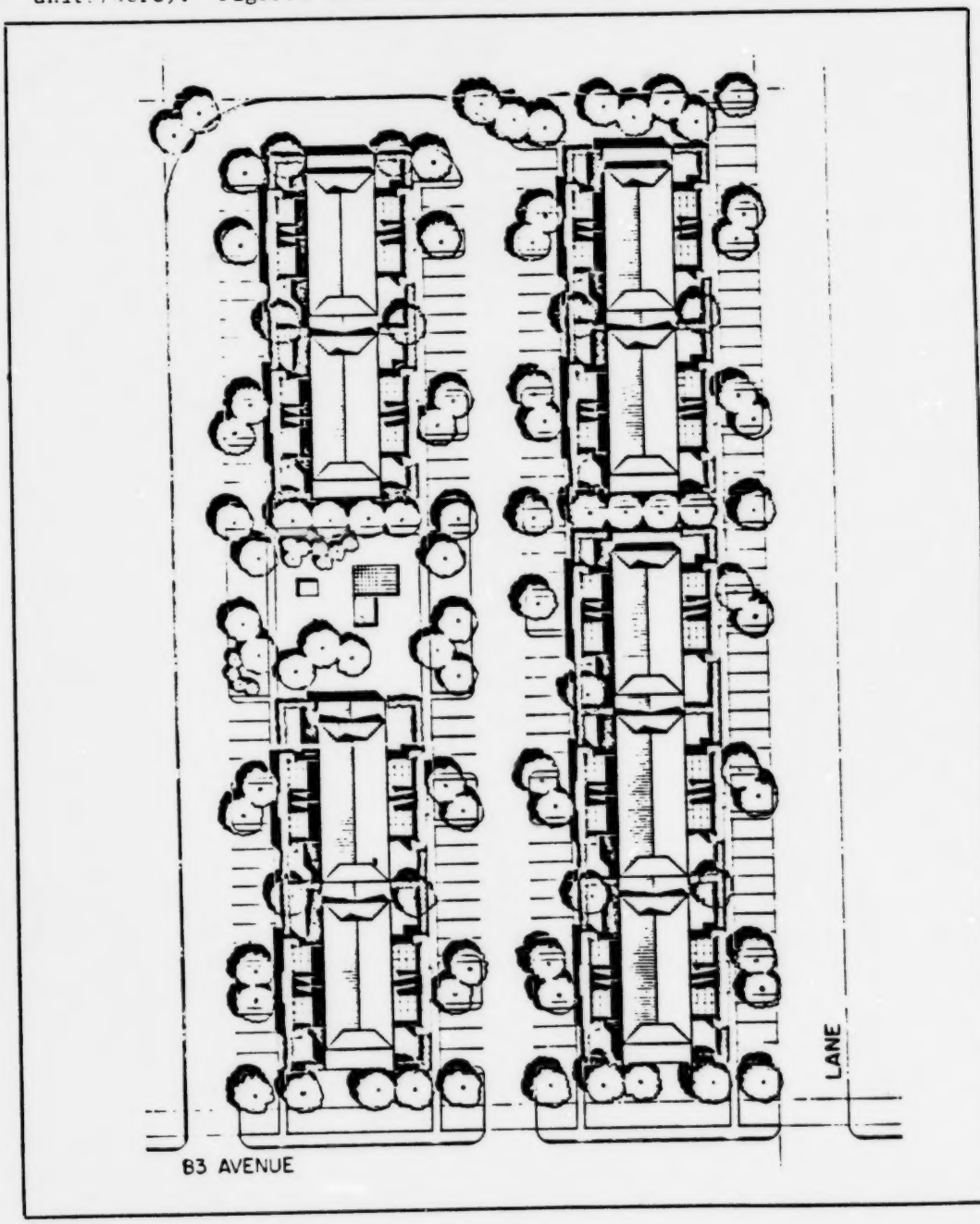



Figure 13: Site A - Site Plan. Option 1 (72 units, parking for 119 cars)

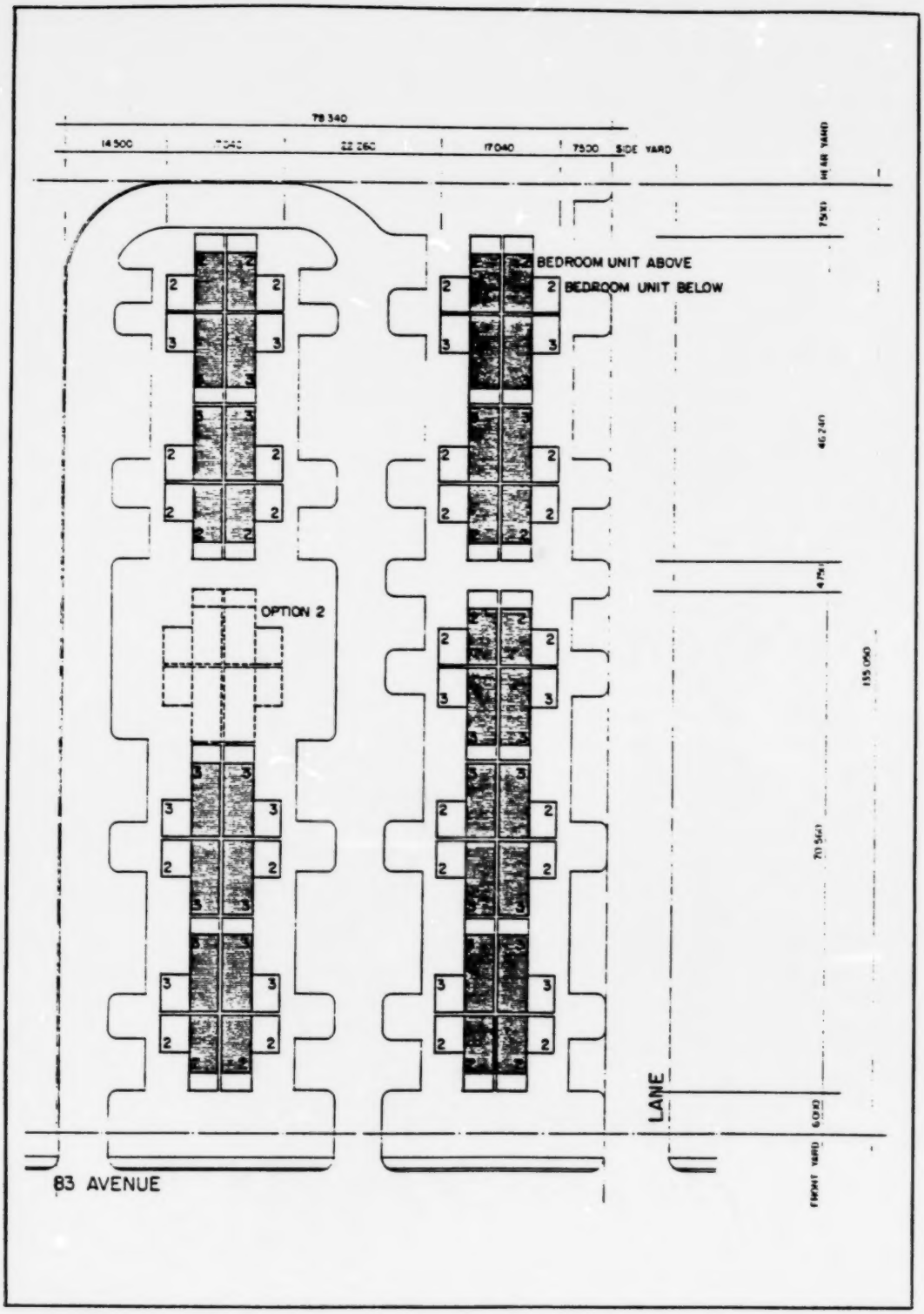



Figure 14: Site A - Schematic Site Layout

This site has the potential to be developed to a higher density. Since there is a small existing park on the west boundary of the site, public open space may be considered redundant. An optional site layout with 80 units is feasible, subject to municipal regulation regarding open space (See Figure 15 below). This achieves 75.6 units/ha. (30.6 units/ acre).

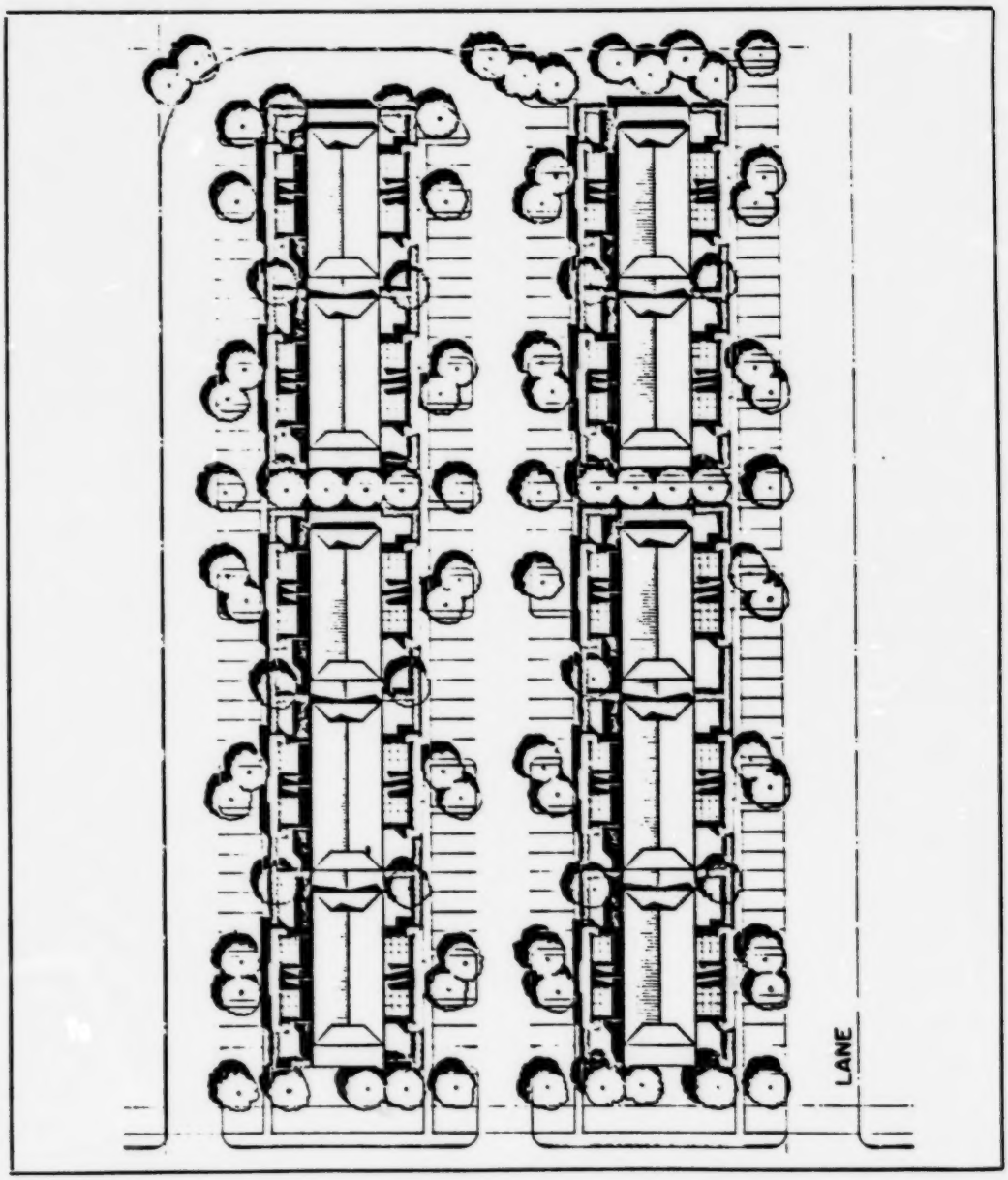



Figure 15: Site A - Site Plan, Option 2 (80 units, parking for 132 cars)

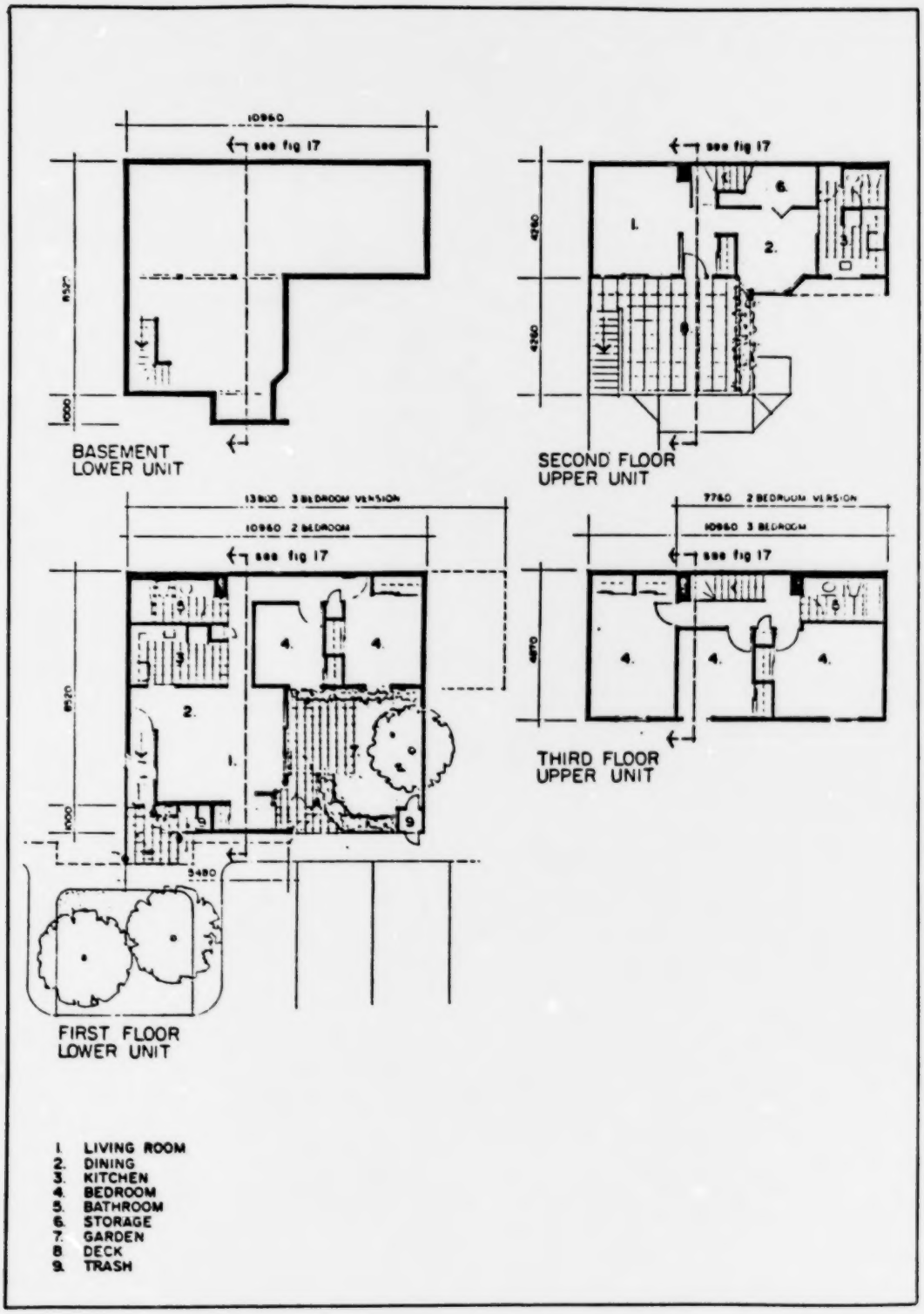



Figure 16: Site A - Floor Plans

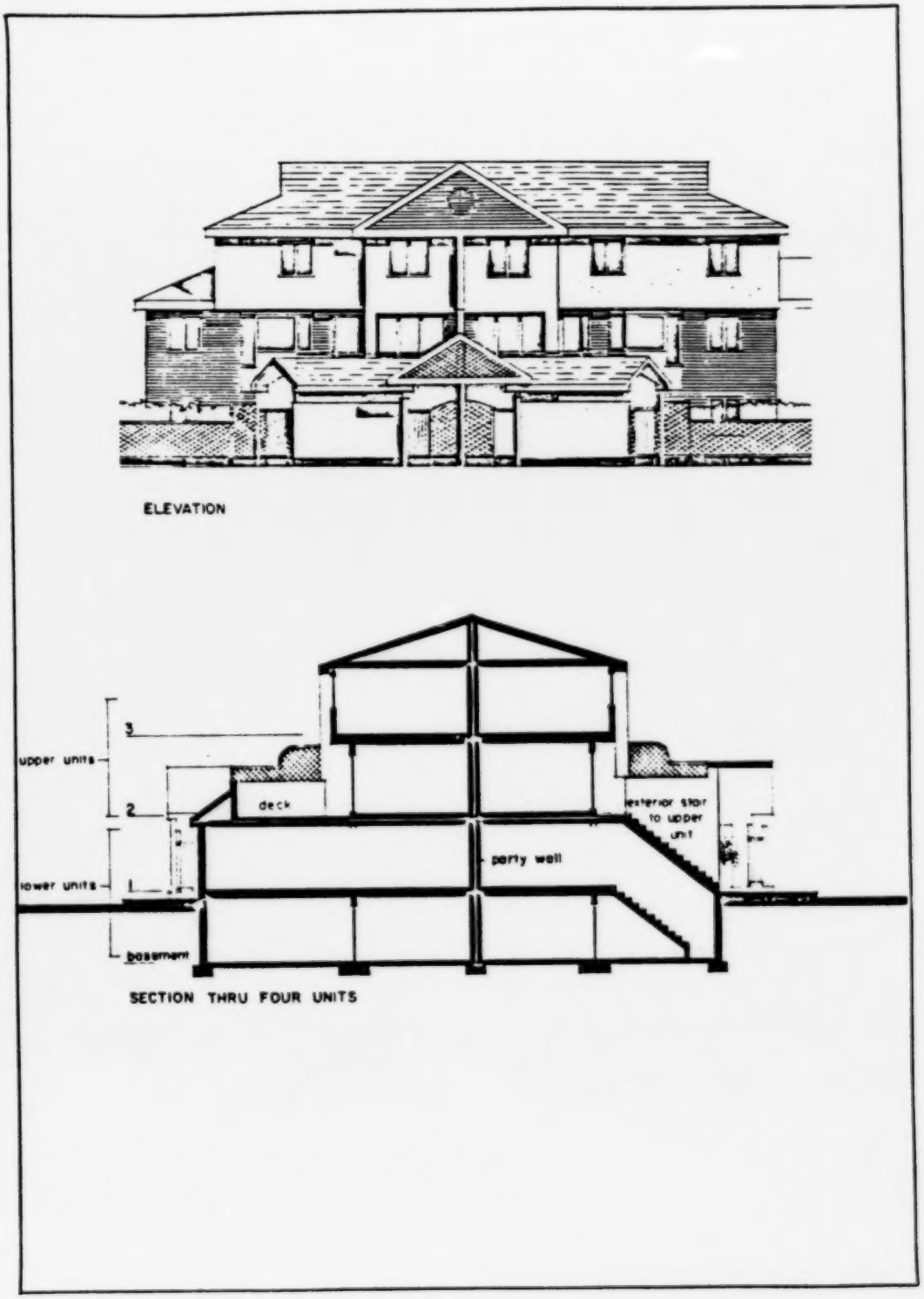



Figure 17: Site A - Building Elevation and Section

Site B (0.530 ha.) was selected for the second type of development with underground parking, because of its similarity in depth to a standard city block. Having the project front onto two parallel streets permits acceptable fire fighting access from the streets without requiring an internal emergency vehicular road. Provision of internal access would be difficult and costly with underground parking. The prototype contains 48 units at a density of 90.6 units/ha. (36.7 units/acre). Figures 18-22 illustrate this. As previously mentioned, densities of up to 125 units/ha. (50 units/acre) are achievable.

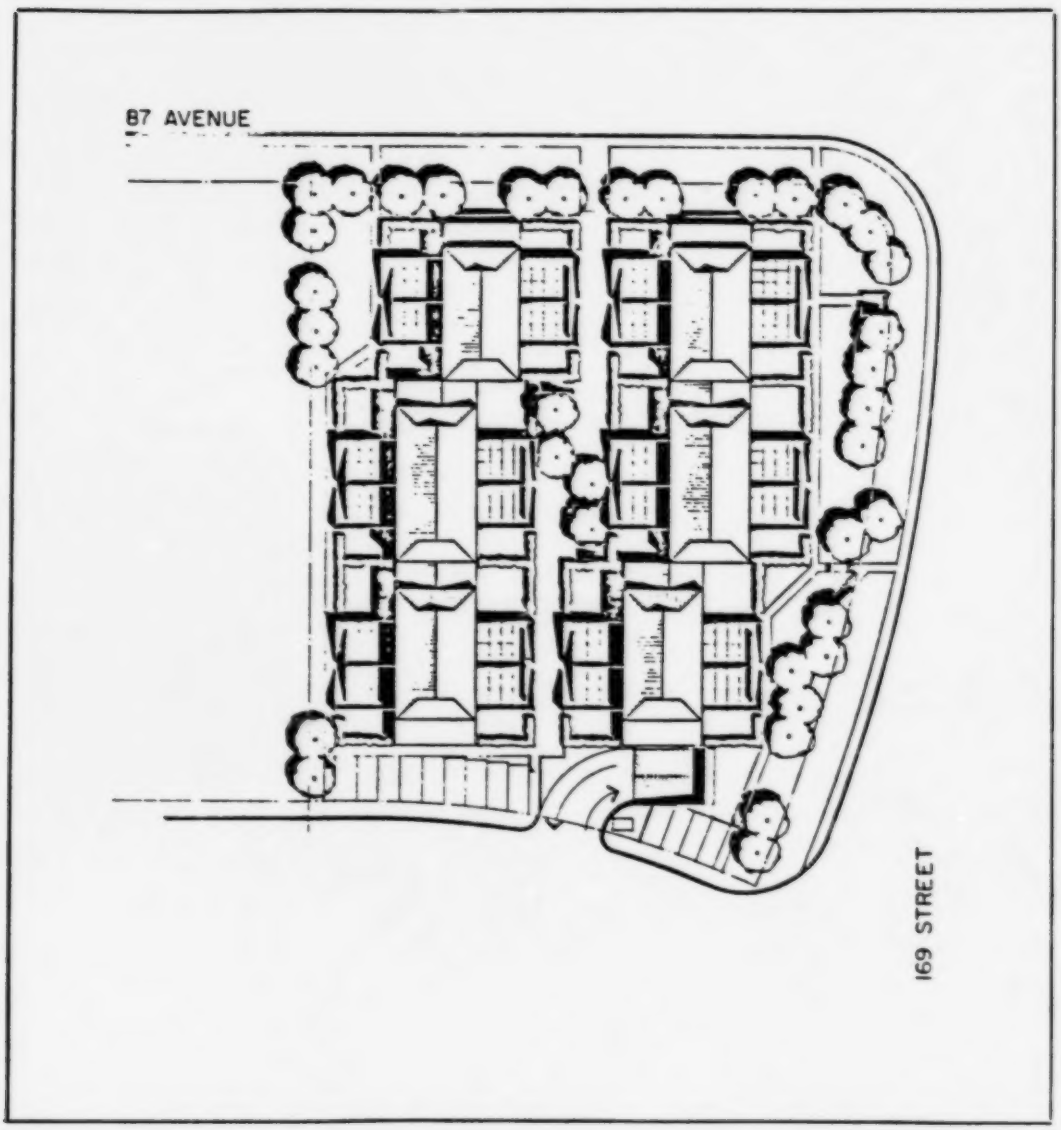



Figure 18: Site B - Site Plan (48 units, Parking for 80 cars)

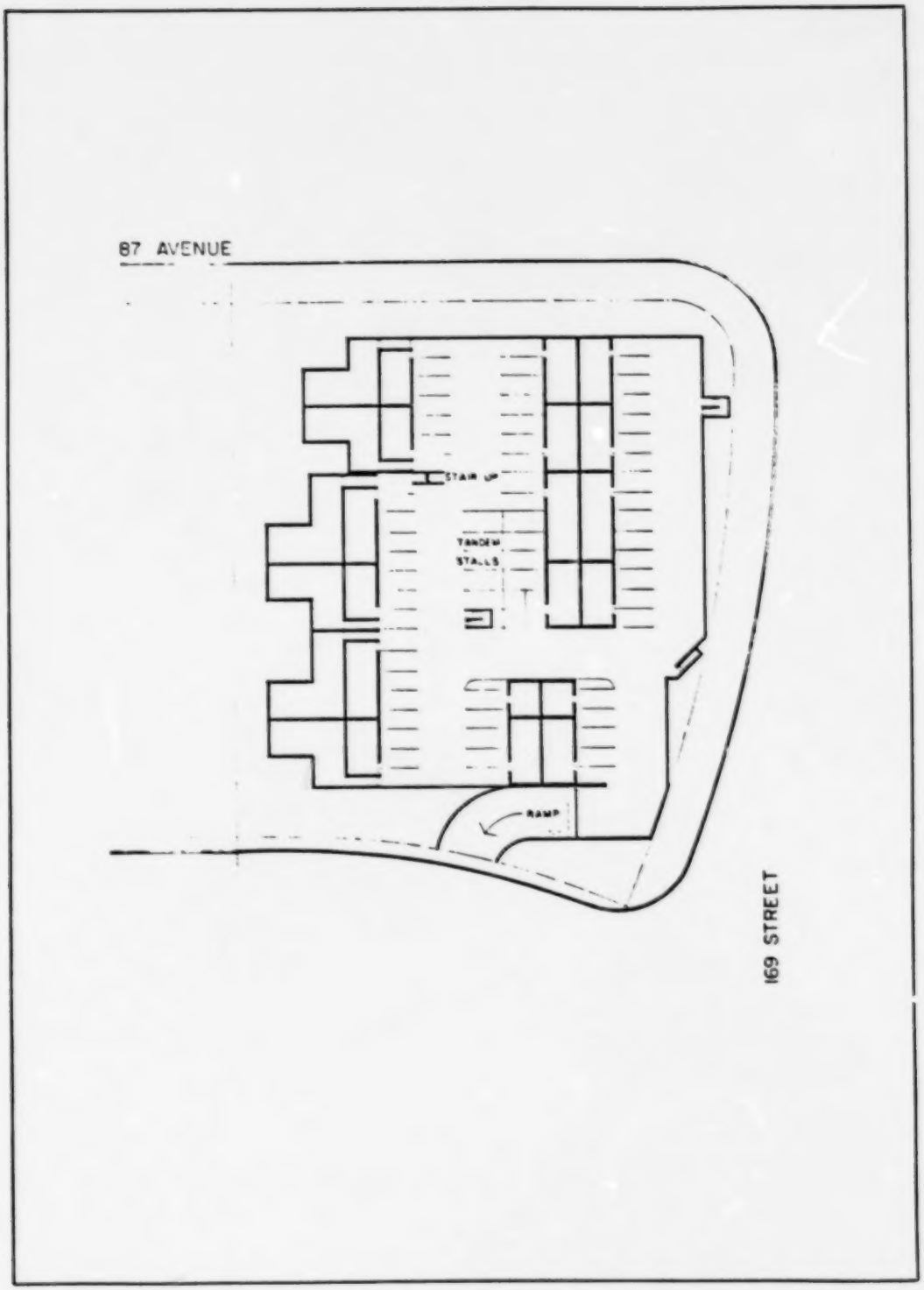



Figure 19: Site B - Basement Plan

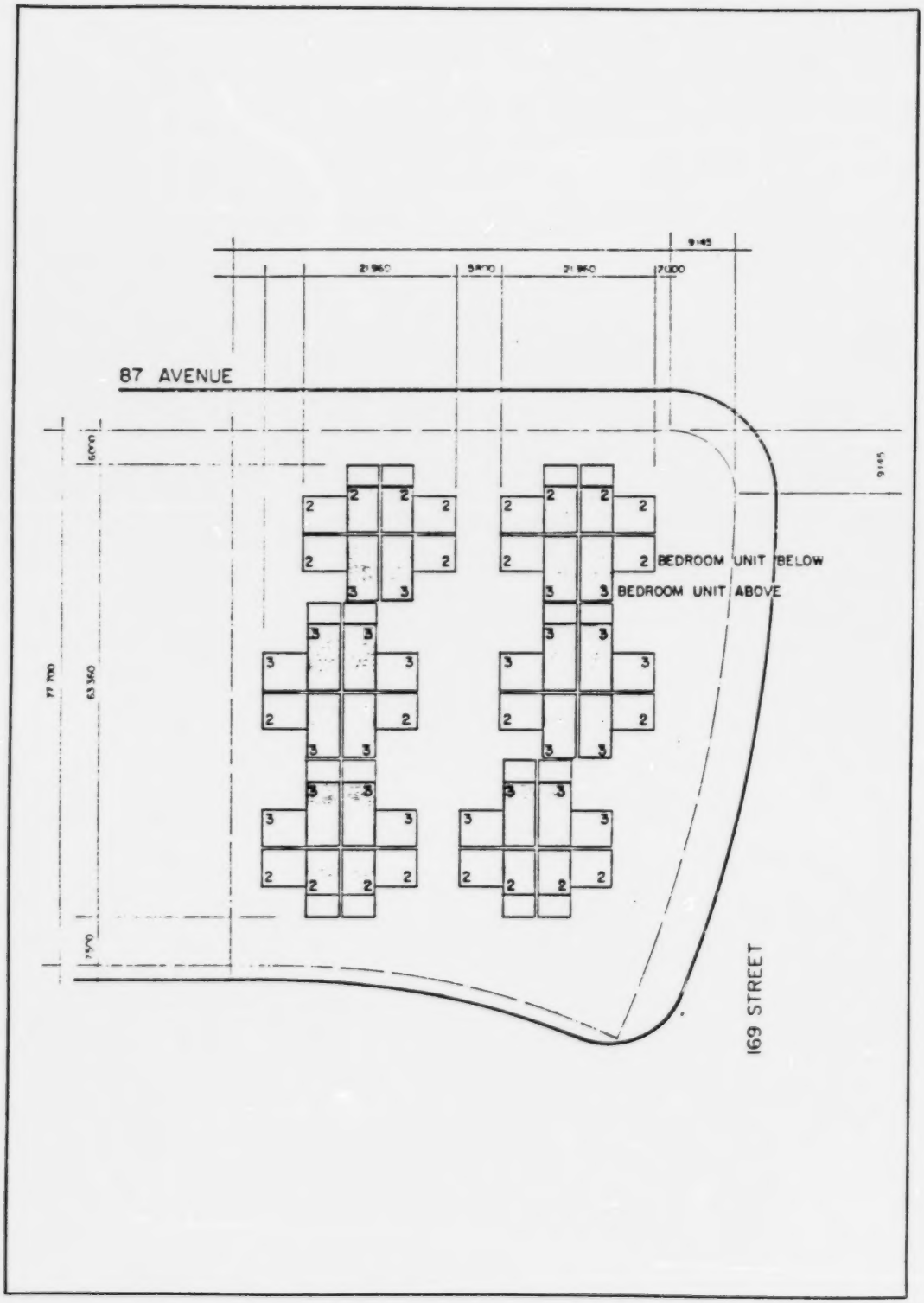



Figure 20: Site B - Schematic Site Layout

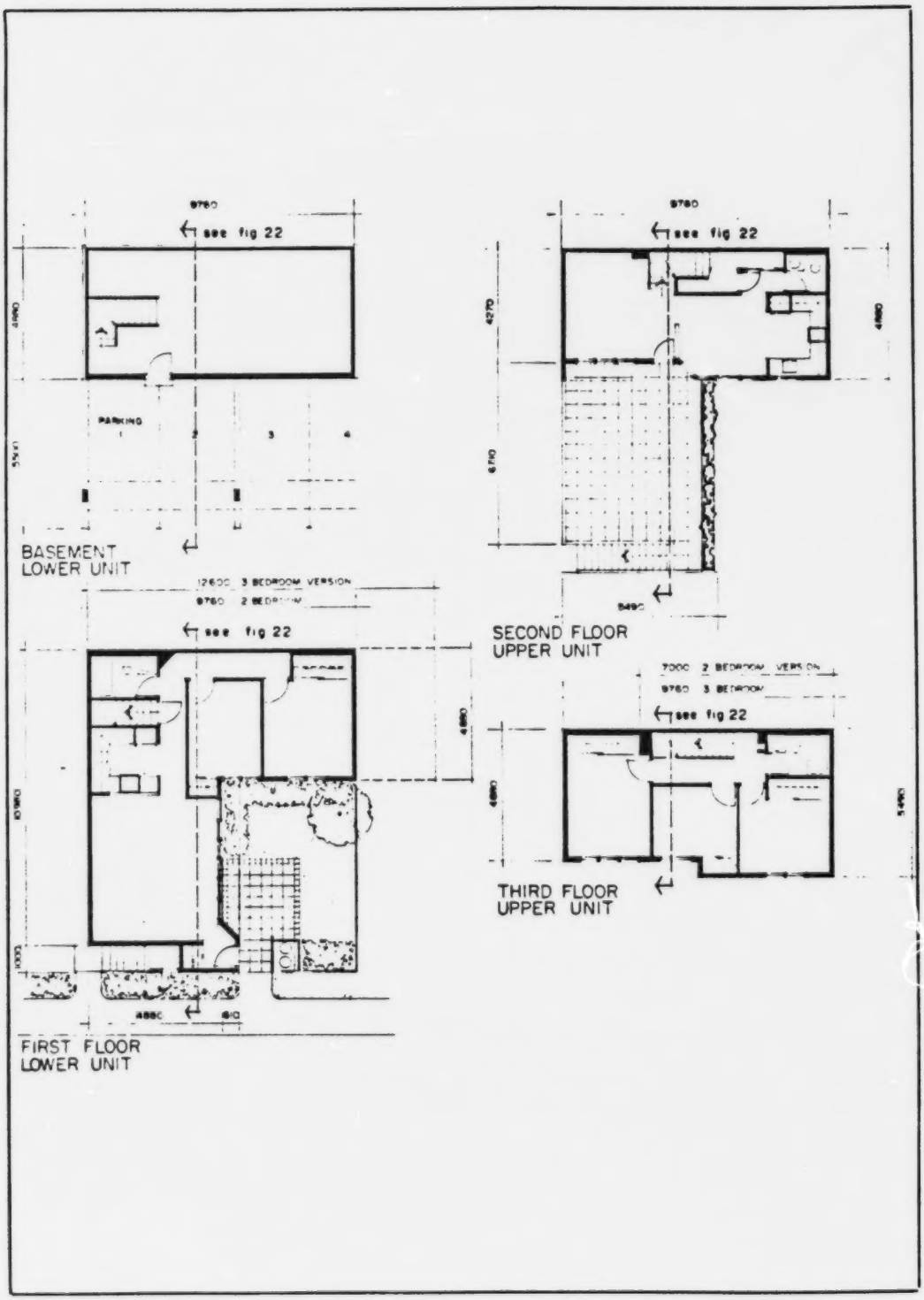
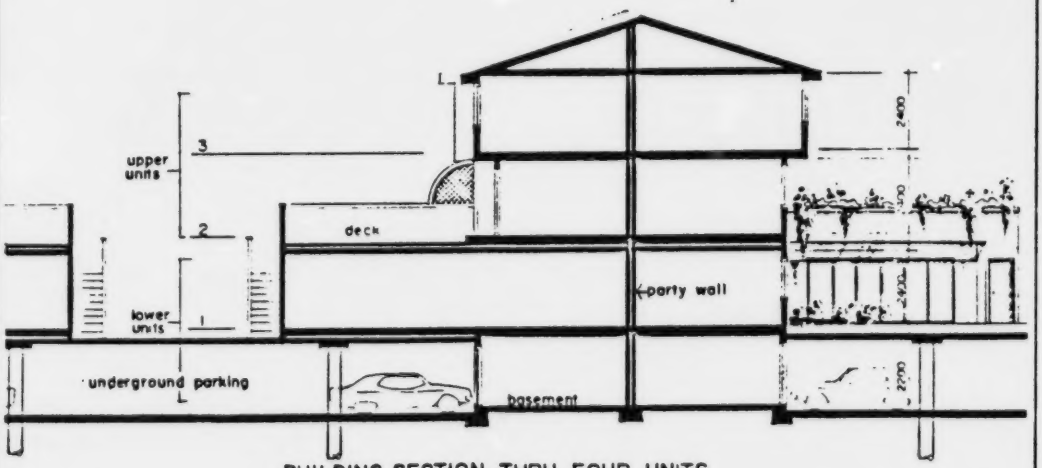



Figure 21: Site B - Floor Plans

ELEVATION




BUILDING SECTION THRU FOUR UNITS

Figure 22: Site B - Building Section

As a comparison, if more conventional development were pursued, this would typically result in walk-up apartments along the lines of that illustrated below for Site B. Two buildings totalling 66 units would achieve a density of 124.5 units/ha (50.4 units/acre). Each building faces onto the street and backs onto its surface parking area. In terms of satisfying family living preferences, the resulting project would have major shortcomings with regard to the items identified in this section, particularly unit and entrance identity, privacy, security, and outdoor space. This is quantified on the next page.

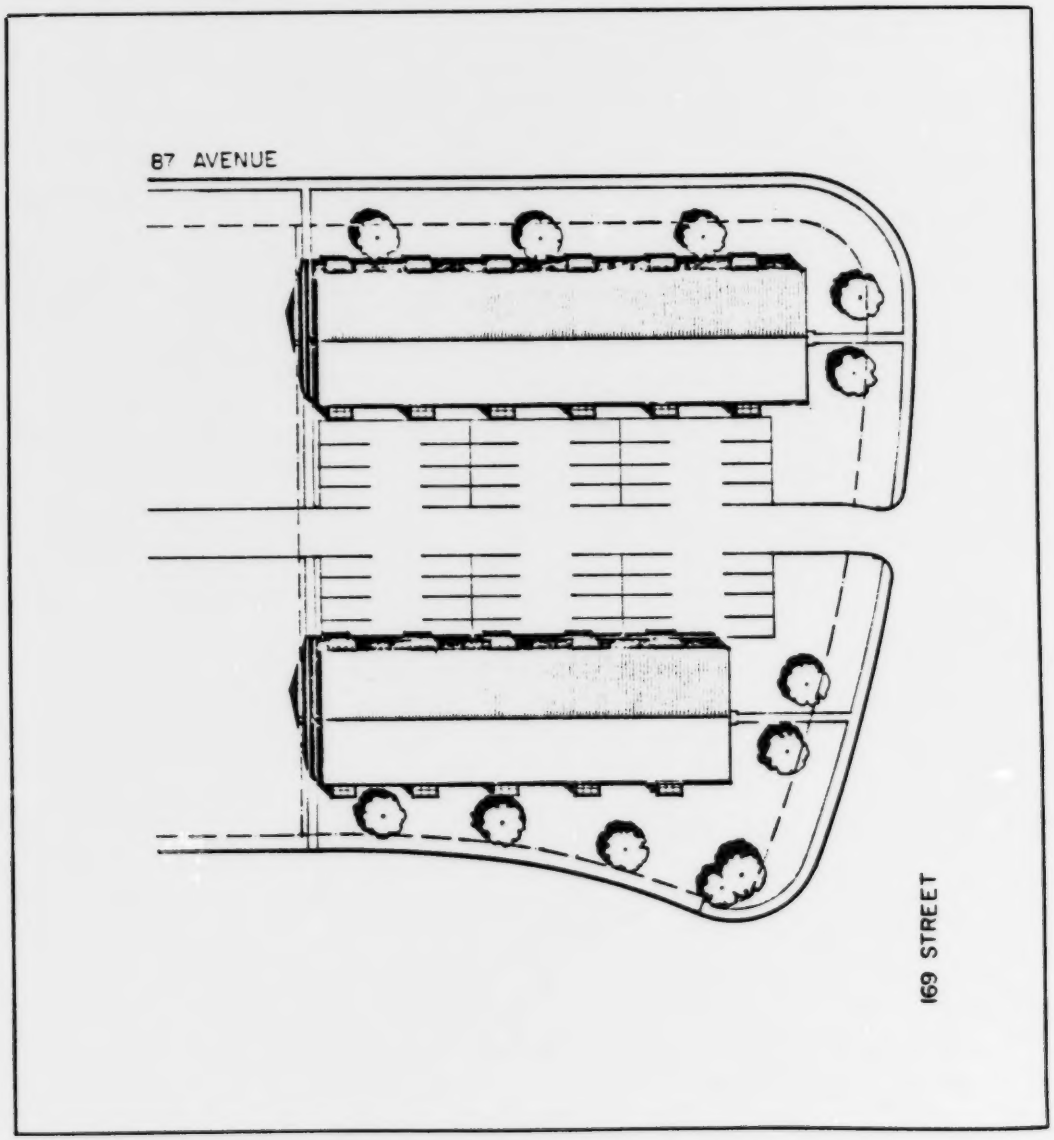



Figure 23: Site B - Walk-up Apartment Site Plan

SUMMARY

A comparison of the two prototype design solutions to a conventional walk-up apartment, in terms of the family design preferences previously discussed, leads one to the conclusion that there is a design alternative that people would find preferable to the apartment. The following summary, giving the ranking of these different forms of housing against those preferences, demonstrates this numerically.

| | Walk-Up Apt. | Prototype With Surface Parking | Prototype With Parking Below |
|---|---|---|---|
| 1. Individual Unit Identity | 5 | 4 | 4 |
| 2. Group Identity | 4 | 3 | 3 |
| 3. Front Entrance Identity | 5 | 2/3* | 3 |
| 4. Parking and Access to the Unit | 8 | 8 | 1/8 |
| 5. Outdoor Space | 5 | 3/4 | 3/4 |
| 6. Privacy | | | |
| a) acoustic separation | 3/4 | 3/4 | 3/4 |
| b) interior visual privacy | 2/3 | 1 | 1 |
| c) visual privacy outdoors | 6 | 2/1 | 2/1 |
| 7. Orientation | 4 | 3/4 | 3/4 |
| Rooms without Windows | 2 | 2/1 | 2/1 |
| TOTAL DEMERITS | 45 | 34 | 31 |

*First number is lower unit, second is upper unit; these are averaged for the total.

Figure 24: Ranking of Different Design Forms based on Family Living Preferences

# Section Four:
# Financial Feasibility

While the prototype better satisfies family living preferences than conventional medium density housing forms, to be viable it must also be financially competitive. Market rents, costs to construct, and operating costs are therefore addressed. A simple pro forma is developed to provide a comparison. As the costs of financing and land are highly variable, they are extracted from the pro forma. They would have to be serviced by the residual left in the pro forma.

MARKET RENTAL RATES

Rents were established in consultation with five major landlords. The very depressed rental levels that prevailed in the Edmonton market in early 1985 have a negative effect on the pro forma. However, they will rise approximately in proportion to current differences between alternate types of accommodation. Therefore, the relative financial viability of one type of development as compared to another should remain about the same.

The rental rates are shown in the following table. Unit sizes are indicated in brackets.

| | 2 Bedroom | 3 Bedroom |
|---|---|---|
| Site A | | |
| - Lower Units | $440 (775 sq. ft.) | $490 ( 900 sq. ft.) |
| - Upper Units | $450 (930 sq. ft.) | $500 (1,089 sq. ft.) |
| Site B | | |
| - Lower Units | $450 (860 sq. ft.) | $500 (1,000 sq. ft.) |
| - Upper Units | $450 (865 sq. ft.) | $500 (1,025 sq. ft.) |
| Walk-up Apartment | $400 (875 sq. ft.) | $450 (1,000 sq. ft.) |
| Townhouse | $500 (900 sq. ft.) | $550 (1,050 sq. ft.) |

OPERATING EXPENSES

The operating expenses were, like the rental rates, established in consultation with five major landlords. These exclude unit utilities, management fees, vacancy factor, and mortgage costs. For Site B, with underground parking, the cost of heating/ventilation and lighting of the garage is included.

| | |
|---|---|
| Site A | $1,850/unit annually. |
| Site B | $2,150/unit annually. |
| Walk-up Apartment | $1,850/unit annually. |

CAPITAL COST OF CONSTRUCTION

The prototype has been designed carefully to best utilize economic forms of construction in order to keep costs reasonable. The same means of construction that are employed in single family homes today are utilized in these buildings. At the same time, high standards are maintained, particularly in sound separation between units. Party walls are all double walls and a concrete topping is employed on the main floor of the upper unit.

Construction was reviewed by a construction contracting company and priced out in detail. The conclusions of this costing are summarized below. These are compared with normal costs to build a typical walk-up apartment project of similar size. It must be recognized that the costs of the prototypical designs, in contrast to the walk-up apartments, include additional amenities and higher standards. If these were deleted, the cost spread would narrow. These include such things as large living room windows, intensive landscaping, and full site irrigation. For Site B, as well, there is the cost of the underground garage, of course.

The following is a summary of the estimated cost of construction.

| | Site A | Site B | Typical Walk-Up Apartment |
|---|---|---|---|
| Cost per unit | $36,000 | $44,000 | $28 - 32,000 |
| Cost per sq.ft. | $ 35.82 | $ 45.69 | $26.00-30.00 |

## COMPARATIVE ECONOMIC ANALYSIS

The purpose of an economic analysis is to establish a simple financial comparison between the prototype and a conventional walk-up apartment project. The current financial viability of one or the other as an investment on a specific site is not the object of the exercise, particularly given the market conditions of 1985. In fact, as the costs of financing and land for a specific site would be common to each type of project and as these are quite volatile, they are extracted from the analysis.

The analysis will show the relationship of cash flow to the capital and soft costs of construction for each type of development. These ratios are then compared to determine the relative viability of each example. (Residual cash flow in any example can be applied to the land value and the cost of financing in establishing financial viability for a specific situation.)

On the following pages are the analyses, as described above, for the four designs previously described. They are:

- Site A, Option 1 with 72 units and surface parking
- Site A, Option 2 with 80 units and surface parking
- Site B with 48 units and underground parking
- A typical walk-up apartment project of 66 units, with surface parking.

Also included is a pro forma analysis for Site A, Option 1 for the first year of operation, to illustrate the current cash flow on such a project. It demonstrates the difficult situation most residential rental projects were facing at the time of writing.

ECONOMIC ANALYSIS

Site A, Option 1: 72 units

| | | | |
|---|---|---|---|
| (a) Revenue - 24 units x $440/mo. x 12 = | $ 126,720 | | |
| 12 units x $490/mo. x 12 = | 70,560 | | |
| 14 units x $450/mo. x 12 = | 75,600 | | |
| 22 units x $500/mo. x 12 = | 132,000 | | $ 404,880 |
| Less: Vacancy Loss @ 5% | 20,244 | | |
| Operating ($1,850 x 72 units) | 133,200 | | |
| Management Fee (5%) | 19,232 | | 172,676 |
| Cash Flow Prior to Debt | | | 232,204 |
| | | or | 219,475/ha |
| (b) Capital Cost - 72 units x $36,000 | 2,592,000 | | |
| Soft Costs[1] - 72 units x $ 4,000 | 288,000 | | 2,880,000 |
| | | or | 2,722,177/ha |
| Cost Per Unit $40,000 | | | |
| (c) Ratio of Cash Flow to Cost of Construction | | | 0.0806 |

[1] Soft costs include cost of construction financing, taxes during construction, insurance, mortgage application fees, engineering and soil testing fees and development profit.

ECONOMIC ANALYSIS

Site A, Option 2: 80 units

| | | | |
|---|---|---|---|
| (a) Revenue - 28 units x $440/mo. x 12 = | | $ 147,840 | |
| 12 units x $490/mo. x 12 = | | 70,560 | |
| 16 units x $450/mo. x 12 = | | 86,400 | |
| 24 units x $500/mo. x 12 = | | 144,000 | $ 448,800 |
| Less: Vacancy Loss @ 5% | | 22,440 | |
| Operating ($1,850 x 80 units) | | 148,000 | |
| Management Fee (5%) | | 21,318 | $ 191,758 |
| Cash Flow Prior to Debt | | | 257,042 or 242,950/ha |
| (b) Capital Cost - 80 units x $36,000 | 2,880.00 | | |
| Soft Costs - 80 units x $ 4,000 | 320.00 | | 3,200,000 or 3,024,575/ha |
| Cost Per Unit $40,000 | | | |
| (c) Ratio of Cash Flow to Cost of Construction | | | 0.0803 |

Site B: 48 units

| | | | |
|---|---|---|---|
| (a) Revenue - 16 units x $450/mo. x 12 = | | $ 86,400 | |
| 8 units x $500/mo. x 12 = | | 48,000 | |
| 8 units x $450/mo. x 12 = | | 43,200 | |
| 16 units x $500/mo. x 12 = | | 96,000 | |
| 67 stalls x $25 = | | 20,100 | 293,700 |
| Less: Vacancy Loss @ 5% | | 14,685 | |
| Operating ($2,150 x 48 units) | | 103,200 | |
| Management Fee (5%) | | 13,950 | 131,835 |
| Cash Flow Prior to Debt | | | 161,865 or 305,405/ha |
| (b) Capital Cost - 48 units x $44,000 | 2,112,000 | | |
| Soft Costs - 48 units x $ 4,000 | 192,000 | | 2,304,000 or 4,347,170/ha |
| Cost Per Unit $48,000 | | | |
| (c) Ratio of Cash Flow to Cost of Construction | | | 0.0703 |

ECONOMIC ANALYSIS

Walk-Up Apartment: 66 units

| | | | |
|---|---|---|---|
| (a) Revenue - 33 units x $400/mo. x 12 = | | $ 158,400 | |
| 33 units x $450/mo. x 12 = | | 178,200 | $ 336,600 |
| Less: Vacancy Loss @ 5% | | 16,830 | |
| Operating ($1,850 x 66 units) | | 122,100 | |
| Management Fee (5%) | | 15,990 | 152,920 |
| Cash Flow Prior to Debt | | | 181,680 or 342,790/ha |
| (b) Capital Cost - 66 units x $30,000 | | 1,980,000 | |
| Soft Costs - 66 units x $ 4,000 | | 264,000 | 2,244,000 or 4,234,000/ha |
| Cost Per Unit $34,000 | | | |
| (c) Ratio of Cash Flow to Cost of Construction | | | 0.0809 |

Summary of Ratios of Cash Flow to Cost of Construction

| | |
|---|---|
| Site A, Option 1: 72 units | 0.0806 |
| Site A, Option 2: 80 units | 0.0803 |
| Site B: 48 units | 0.0703 |
| Walk-Up Apartments: 66 units | 0.0809 |

PRO FORMA

Site A, Option 1: 72 units

The following pro forma is provided only to illustrate the financial picture for the above project in its first year of operation, as it would appear under the economic conditions prevailing in 1985. It yields a negative cash flow, suggesting an unacceptable investment. However, in the depressed market of recent times, achieving a acceptable financial return has often been a matter of minimizing losses rather than making a profit. A stronger market would yield better results. For that reason the preceding comparison of ratios was introduced to give a comparison relative over time.

| | | | | |
|---|---|---|---|---|
| (a) Revenue - | 24 units x $440/mo. x 12 = | $ 126,720 | | |
| | 12 units x $490/mo. x 12 = | 70,560 | | |
| | 14 units x $450/mo. x 12 = | 75,600 | | |
| | 22 units x $500/mo. x 12 = | 132,000 | | $ 404,880 |
| Less: | Vacancy Loss @ 5% | 20,244 | | |
| | Operating ($1,850 x 72 units) | 133,200 | | |
| | Management Fee (5%) | 19,232 | | 172,676 |
| Cash Flow Prior to Debt | | | | 232,204 |
| | | | or | 219,475/ha |
| (b) Capital Cost - | 72 units x $36,000 | 2,592,000 | | |
| Soft Costs - | 72 units x $ 4,000 | 288,000 | | |
| Land [1] - | 72 units x $ 3,000 | 216,000 | | 3,096,000 |
| | | | or | 2,926,340/ha |
| Cost Per Unit $40,000 | | | | |
| (c) Assume 80% Financing (N.H.A.) | | | | |
| First Mortgage @ 80% | | 2,476,800 | | |
| Required Equity | | 619,200 | (8,600/unit) | |
| (d) Cash Flow Prior to Debt | | | | 232,204 |
| Debt - $2,476,800 @ 11 5/8 % 5 Year Term/ 25 year amortization | | | | 298,932 |
| Deficit (annual) | | | | (66,728) |

Note: Average increase in rent/unit required to cover all costs is $77/month. Alternately, a reduction in land costs to about $2,150 per unit would have the same net effect.

[1] Land value asseumed; few sales currently to use as a basis.

## CONCLUSION

As can be seen from the ratios derived from the comparative economic analyses, the prototype design with surface parking produces a yield very similar to that of a walk-up apartment. The prototype with underground parking produces a lower yield. It might prove to be competitive with a conventional housing form also employing underground parking, but it is not economically competitive with the walk-up apartment with surface parking.

The developers who reviewed the designs and pro formas were unanimous in their opinion. Each felt the prototype design with surface parking was well worth considering. It was not only considered financially competitive on paper but, as well, they felt it would likely have a lower vacancy rate in a tough market, thus providing greater security of investment.

What conclusions can one therefore draw about the financial aspects of the prototype? The stacked courtyard housing form, when it utilizes surface parking, provides family housing that is competitive with the walk-up apartment in terms of the financial return on investment, and likely provides greater security of investment for the owner. Secondly, it provides this at lower rental rates than those of townhouses, thus lowering the floor price of accommodation suitable to families.

# Section Five:
# Conclusion

Most families in Alberta aspire to a single family home as the housing form that best satisfies their living preferences. Alternate housing forms at higher densities are more economic but less successful in satisfying these preferences. This is particularly true at densities greater than townhouses, the most common form of which is walk-up apartments.

The shortcomings of housing design in this medium density range of family accommodation are primarily related to the grouping of units and site planning, rather than interior unit layout. The questions which need to be resolved are two fold:

1. Is there a form of housing at densities significantly higher than that of townhousing that better addresses the needs and preferences of families than our conventional medium density forms, such as walk-up apartments?

2. Can such housing be provided at a cost that makes economic sense in terms of either:

   - lowering the floor on the price of housing suited to families or

   - providing housing suited to families that is competitive in economic return with other forms of medium density housing, typically walk-up apartments?

Regarding the first item, a prototype housing form has been developed that combines a one storey courtyard home with a two storey terrace unit stacked above it. The design provides accommodations that better satisfy family living preferences, as identified in Section 2, than more conventional forms at comparable densities. The basic amenities improved upon are the following:

(1) Individual Unit Identity
(2) Group Identity
(3) Front Entrance Identity
(4) Parking and Access to the Unit
(5) Outdoor Space
(6) Privacy
(7) Sunlight and Orientation

Financially, the prototype is successful in lowering the price of housing suited to families below that of townhouses. It also provides a form of housing that is financially competitive with walk-up apartments. Thus, medium density housing suited to families can be introduced into more central locations. This provides occupants with better access to employment and a wider range of social, recreational, cultural, and commercial services than are readily available in lower density areas.

It therefore is reasonable to conclude that the prototype may warrant a place in the overall inventory of housing accommodation.

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# Appendices

# Appendix A:

## Correspondence with Approving Agencies

**The Cunningham Partnership**

Architecture, Planning
Landscape Architecture

Suite 1502 Royal Bank Building
10117 Jasper Avenue
Edmonton, Alberta, Canada. T5J 1W8
(403) 420-6680

Cory Cunningham, M Arch MAAA MRAIC
Roger du Toit, M Arch CSLA MCIP MRAIC

February 27, 1985

City of Edmonton
City Plan Checkers
6th Floor, City Hall
1 Sir Winston Churchill Square
Edmonton, Alberta

Attention: Mr. L. Bruin

Dear Mr. Bruin:

Re: Alberta Housing Study

This letter is to confirm the meeting between myself, yourself and Mr. G. Lawless regarding your comments on the design proposals for the two sites.

Site "A"

Item #1 Some of the buildings are over 600 sq. metres. These would require a 2 hr. firewall separation. (Design conforms).

Site "B"

Item #1 If the storage garage is not separated as a building from the rest of the building by a 2 hr. U.L. rated separation, the building will be considered a four-storey building and therefore have to be a non-combustable construction throughout.
Item #2 Vestibules will be required where there is access from basements to the parking garage. (Design can incorporate this).
Item #3 The parking garage will require sprinkling. (Allowed for).
Item #4 A siamese connection will be required. (Allowed for).

Yours truly,

THE CUNNINGHAM PARTNERSHIP

W.G. ROBERTS
WGR/dfp

c.c. - Mr. J. Snaterze
- Mr. G. Lawless

**The Cunningham Partnership**

Architecture, Planning
Landscape Architecture

Suite 1502, Royal Bank Building
10117 Jasper Avenue
Edmonton, Alberta, Canada. T5J 1W8
(403) 420-6680

Cory Cunningham, M Arch MAAA MRAIC
Roger du Toit, M Arch CSLA MCIP MRAIC

February 27, 1985

The City of Edmonton
Fire Department
10221 - 107 Street
Edmonton, Alberta T5J 1K1

Attention: Mr. Brad Guthrie

Dear Mr. Guthrie:

Re: Innovative Prototype for Higher Density Family Accommodation

Regarding our meeting of February 26, 1985 and our discussions of two possible sites, please find enclosed one set of prints each for Site "A" and "B", as requested. The following are the comments we discussed.

| Site "A" | Design Conforms |
|---|---|
| The lane on the east side of the property should not be considered as fire fighting access. | yes |
| With the travel access on site being accessible from both ends, this roadway can be considered as fire access even with the possibility of work in the future being done to the right-of-way. | yes |
| All requirements regarding widths, construction, no parking, and signage along road are to be met. | yes |
| The requirements for 90 metres travel distance to main entrances from fire hydrants to be met. | yes |
| If buildings are over 600 sq. metres on the ground floor, a firewall must be constructed or the number of streets increased to fall within the area requirement. This would require the on-site fire lane being designated a street. | fire wall to be built in all buildings of more than 8 lower units. |

... /2

| | Design Conforms |
|---|---|
| The buildings must be considered as three storey. If considered four storey, non-combustable construction would have to be used throughout. | yes |
| As discussed, fire fighting access to unit entrances is a 45 metre maximum distance. With the addition of a sidewalk link at the north end of the east units access to the northeast block would be acceptable and a possible 7 metre shortfall in travel distance to only one unit in the southeast block would be an acceptable variance. | yes (as qualified) |
| Site "B" | |
| The major assumption to be made on fire access to the site is that the lane at the south end of the building be considered as fire access. As discussed, if the lane is the proper width and is paved as required, this assumption would be accomplished.* | yes |
| The distance from each unit main entrance to the nearest fire hydrant cannot exceed 90 metres. | yes (may require addition of hydrants) |
| The fire fighter path of travel to the entrances of each unit is to be not greater than 45 metres from the pumper truck on the street. | yes |
| The parking garage can be considered as a separate building or as part of the overall building. If considered as part of the building, it would be four storeys high and would therefore have to be all non-combustible construction. If the parking garage is a separate building, residential buildings can be combustible construction. | yes (parking garage is a separate building) |
| The parking garage would have to be sprinkled. The Fire Department stated that to conform to the 1985 Alberta Building Code, there is a possiblility that the total building would have to be sprinkled. The 1985 code should come into effect June 1, 1985. | yes |

* Note: This building type works where access from a street to entrance is 45 metres or less.

... / 3

Thank you for your time and effort to review this proposal.

Yours truly,

THE CUNNINGHAM PARTNERSHIP

W. G. ROBERTS

WGR/dfp

# Appendix B:

## Examples of Medium Density Family Housing in Alberta

A number of existing projects in Edmonton and Calgary were examined first hand. Several were found to be particularly relevant to this study; therefore, they were examined in more depth. The results are presented on the following pages.

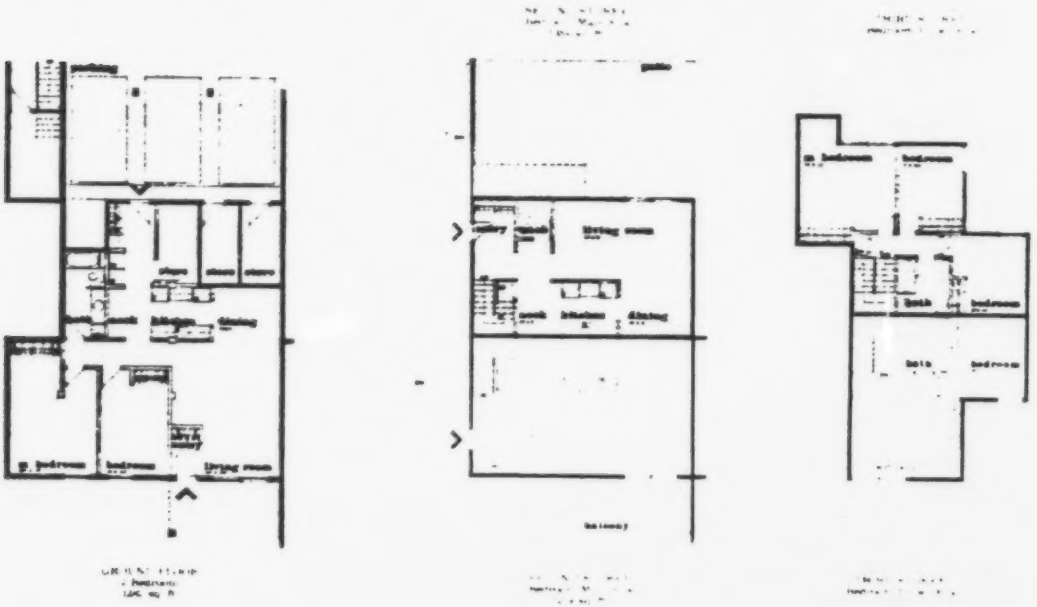
HILLCREST PLACE[1]

159 Street and 77A Avenue, Edmonton, Alberta

Description

Unit Count: 144 units
Breakdown: lower - 48-2 bedroom (1,282 sq.ft., $510/mo.)
upper - 24-2 bedroom (with balcony) (1,214 sq.ft., $525/mo.)
- 26-3 bedroom front (with balcony) (1,354 sq.ft., $570/mo.)
- 46-3 bedroom rear (with large patio) (1,354 sq.ft., $585/mo.)

Density: 58 units/ha.(23.5 units per acre).
Parking: 1 garage per suite plus 34 stalls with plugs.
Amenities: - Large paddling pool, used for skating in winter.
- Valley across the street from site.
Occupants: - Large percentage of retired people (who like lower unit).
- Business people.
- Less than half are families with children.
- Many are people looking for maintenance-free living.
Built: 1973.
Architect: H.V. Richards Architect, Edmonton, Alberta



[1]Interview held with: Mr. Pat Whelan, Marketing & Property Development Manager, MacLab Enterprises, Mr. Dale Moline, Manager of Revenue Properties, MacLab Enterprises, Ms. Annette Dunlop, Leasing Manager Hillcrest Place.

This rental project illustrates, in a stacked unit form, a number of the issues of medium density housing, although its density is only slightly higher than townhousing. Therefore, in terms of density achieved, it falls short of our target range.

INDIVIDUAL UNIT IDENTITY - Ranking: 3 to 4 out of 5

The units are staggered in a sawtooth pattern on the site, giving greater identity to each group of units. However, the material and color selection is the same throughout the site, resulting in a strong identity for the entire project, rather than for the units.

FRONT ENTRANCE IDENTITY - Ranking: Lower Units 2 out of 5
Upper Units 4 out of 5

Residents enjoy having their own entrance, in the experience of management, preferring it to shared interior stairs and a corridor. Lower units have an entrance from their front patio, which is somewhat hidden, and reads more as the door from the unit to yard. Upper units have an entrance on a deck shared by four dwellings, compromising the individual identity of each to a degree. As well, with no private transition zone, privacy is lost at the entrance. Some entrances offer covered protection under the third storey but are quite concealed and would require directional signs.

PARKING AND ACCESS TO THE UNIT - Ranking: Lower Units 1 out of 8
Upper Units 5 out of 8

The garages are very highly valued by the residents. The parking and access for the lower unit are ideal except that the garage, while it has a door for privacy and security, is shared on the interior with two other stalls. Some people apparently often leave their garage door open, creating a security problem for the other two tenants in the same garage, which could lead to ill-will between neighbors. This would be unacceptable in an ownership situation. A secondary note concerns the storage rooms adjacent to the garages. They are locked and have been no security problem.

Occupants of upper units must walk from their garage along the driveway, up a shared stair and along a shared exterior deck to their units. Private enclosed access from the garage to the upper rear unit would have been valued and feasible, but would have an obvious cost attached.

The shared stairs and upper walkways cause some problems in winter and spring if they are not kept cleared of snow. Private stairs would permit the option of transferring maintenance to the occupant.

As a general note, Mid-West Property Management find occupants prefer surface parking lots to a parking structure. They would also prefer to have a higher parking ratio in this project.

OUTDOOR SPACE - Ranking Lower Units 3 out of 5
Upper Units 4/5 out of 5

The large patio of upper rear units is very popular. The owner says these units always rent first, largely for this reason. Yet for many they have a mediocre view onto the driveway and other patios. This illustrates the value people place on a good-sized outdoor space, (as compared to a small balcony like the one on upper front units) compared to view and exterior privacy. When combined with a view, an upper level yard is particularly attractive, as evidenced by the fact that the units with large patios overlooking the pool are people's first choice in the project. Lack of direct access to exterior patios from the shared walkway has never been an issue, perhaps because there are not many children. Lower patios are small but satisfactory and well used, as the people have private yard space surrounding the patio. People commonly use their outdoor space for barbequeing, entertaining, sunbathing and growing flowers.

PRIVACY - SEPARATION FROM NEIGHBORS AND PUBLIC

Sound transmission between units is the single biggest complaint from occupants. Soundproofing in the project is good, but not the best; complaints relate primarily to the party walls. The second floor is concrete, providing good acoustic separation between upper and lower units. However, children playing on the upper deck over the lower unit sometimes can be heard below. It would have been ideal to have the three bedroom units, which are more oriented to families, on the lower level.

There have also been leakage problems from the upper deck. However, the owner feels these are largely a result of the type of construction. For instance, insulation is limited. The owner is confident that proper construction methods available today would prevent these problems from occurring, and would not hesitate to build a similar form again.

One other complaint about separation has to do with the garage. Some occupants of lower units complain of the odor of exhaust fumes. This would need to be handled carefully in new designs.

Visual privacy of yards is not a major issue, in the opinion of the landlord. This is supported by the fact that the units of higher exposure, but with large patios, are preferred. However, overview into yards or neighboring units is also not excessive in the project.

## SUNLIGHT AND ORIENTATION

No particular attention was paid to this in the siting of the project. Orientation for view is a factor in renting, nonetheless. The units with a view of the ravine across the street are popular; the units facing an adjacent shopping centre are not as popular. People also prefer the brighter aspect of the upper units to the lower ones, wnere the living room is darker because of the projecting balcony of the upper unit.

## CONCLUSION

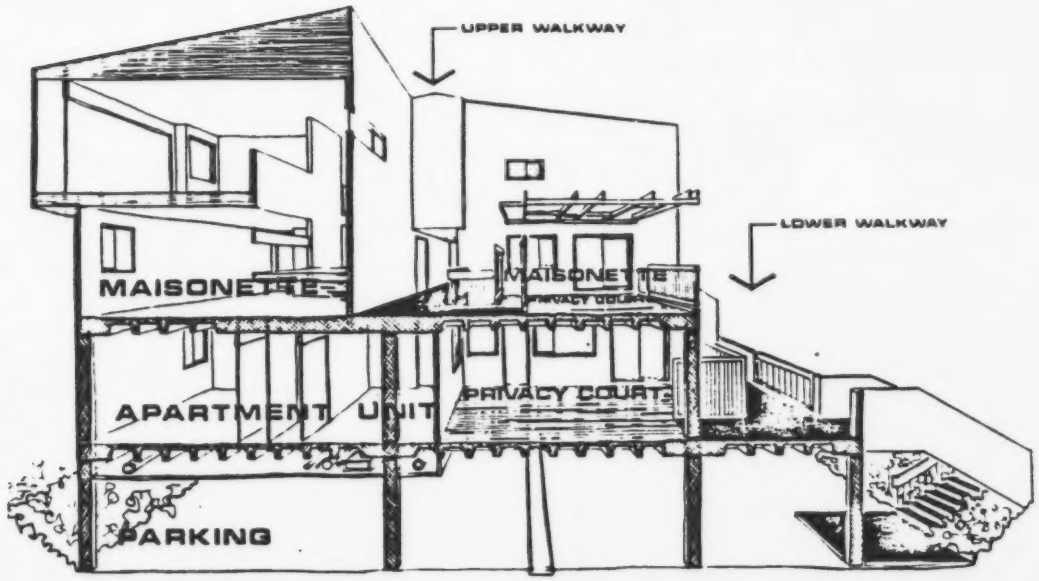
The owner is generally satisfied with the design of the project and would consider repeating it, with refinement, given the right location.

HILLINGTON COURT[2]

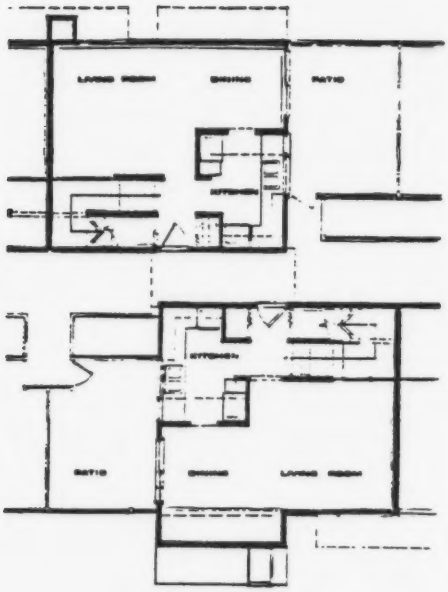
159 Street and 77A Avenue, Edmonton, Alberta

Description

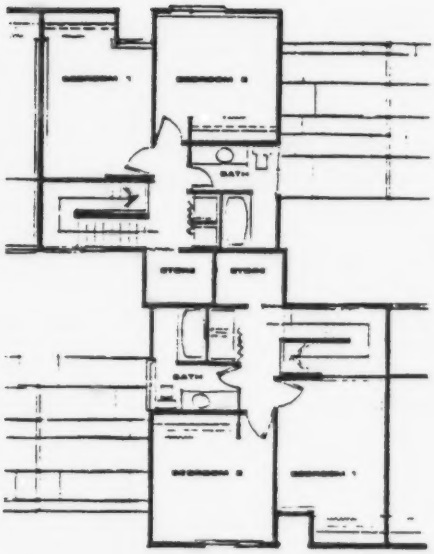
| | |
|---|---|
| Unit Count: | 108 units |
| Breakdown: | 72 two-storey, two bedroom units stacked on top of 36 one-storey, three bedroom units. |
| Density: | 65.7 units/ha. (26.6 units per acre) |
| Parking: | Open, under building. |
| Amenities: | Children's playground and interior landscaped court. |
| Occupants: | Wide range, over half being families. |
| Built: | 1969 |
| Architect: | Jack Long Architect, Calgary, Alberta |




[2]Interviews held with: Ms. Amy McLean, Manager, Hillington Court; Mrs. Margaret Moar, Resident, Hillington Court.

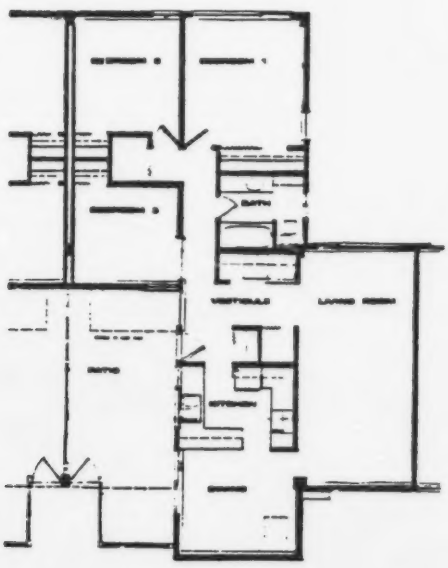


LOWER LEVEL



UPPER LEVEL

MAISONETTE LEVEL PLANS



APARTMENT LEVEL PLAN

This project was originally built for rental and subsequently sold to a non-profit cooperative corporation. Dwellings are arranged along shared walkways one and two levels above the covered parking, which is under the buildings but open on the sides. As a result, yards are not on grade but are courts on the structural slabs.

INDIVIDUAL IDENTITY - Ranking: 4 out of 5

Typically, units are grouped twelve to a building. Units are given individual identity, to a degree, by having them separated by the private courtyards along the shared walkways. However, in spite of a good deal of articulation in elevation and high percentage of perimeter walls for each unit, there is not a strong sense of individual identity to either units or buildings. Complaints from the occupants of visitors easily getting lost in the project is evidence of a lack of coherent organization of the buildings.

Identity with the project is stronger for units facing into the central court than those around the perimeter. Some feel the project is too large and should be split in two, each half focussing on its own court. However, the shared walkways are used by the residents for strolls and help to foster a strong sense of community.

FRONT ENTRANCE IDENTITY - Ranking: 4 out of 5

People stated that they preferred their entrances from the shared walkway to having an interior corridor. However, visitors must intrude on the private yard of a lower unit to get to the front door and upper units have no private transition zone outside the entry door. This results in a loss of privacy in both cases.

As well, access is somewhat circuituous for the visitor from the parking area or the adjacent public street, resulting in difficulty locating units.

PARKING AND ACCESS TO THE UNIT - Ranking: 8 out of 8

The covered parking was considered a major flaw. People approved of having a view into the parking area for security but felt it was too accessible to outsiders as evidenced by past vandalism. Women felt insecure in the parkade, particularly at night, due in part to less than ideal lighting. The concensus seemed to be that either surface parking or a fully enclosed garage would be preferred.

As well, access from the parking to the second level walkway was a complaint, particularly when carrying small children or groceries. People were prepared to pay the difference in cost between a two bedroom and three bedroom unit to avoid the extra flight of stairs. Women also feel insecure on the walkways in the evening. Private access from the parking level to the unit would be preferred, both for security and convenience. They felt it was worthwhile, even if it reduced the community spirit engendered by meeting people on the walkway. Interestingly, though, no one has ever suggested introduction of an elevator.

It should also be noted that the parking design resulted in the lower level units having both baseboard and in-floor hot water heating. Operating costs are high.

OUTDOOR SPACE - Ranking: 3 out of 5

Private courtyards are adequate in size. Those on the upper level are well used because they are bright; however, lower ones are not well used because they are covered and fairly dark. They also cause some feelings of insecurity at night because they are secluded. Both are good for tots to play in and children who are a little older extend their play onto the lower walkway. However, because the kitchen does not have a window looking onto the walkway, the design limits supervision of children playing on the walkways or common areas from the units. It was thought that, in the trade off between the ability to supervise and interior privacy, supervision would be preferred.

The lower walkway is used by the residents for recreation but much of the common area is very underutilized. Poor accessibility could be one reason. The central court is used by some for sunbathing, picnicing, etc. The playground is too remote for children's play, but for the same reason is popular among teenagers in the evening.

Finally, the concrete deck of the courts was a complaint. Wood or carpet would be preferred.

PRIVACY - SEPARATION FROM NEIGHBORS AND PUBLIC

In a cooperative housing project, residents are willing to forsake a degree of privacy for the sake of a stronger community. Nonetheless, the residents still want and need a degree of privacy.

Separation between units is very good, but the upper level walkway extends over lower units and some sounds, particularly roller skates and high heels, can be heard in the units below. As well, noise from the parking garage is troublesome in the lower units because of the building configuration.

The placement of all the three bedroom units on the lower level has resulted in most families with children being on that level. This minimizes the problem of noise transmission through the floor by children's play.

Siting of units can result in loss of acoustic privacy too. People backing onto the children's playground and onto the street find the noise from these sources a nuisance.

The desire for visual privacy has also meant some people have screened their private patio, particularly where people climbing the stairs to the upper walkway can look in. In general, though, patios enjoy a good degree of visual privacy.

## SUNLIGHT AND ORIENTATION

Siting has not taken special account of orientation. As a result of this and the design, many lower units and patios are darker. Utility expenses are considerably higher for these units as a result. Upper decks are sunny and therefore are well utilized.

## CONCLUSION

In conclusion, this project has many good features worthy of repetition and some lessons of things to avoid. Done again, it would undoubtedly result in a different form.

# Appendix C:

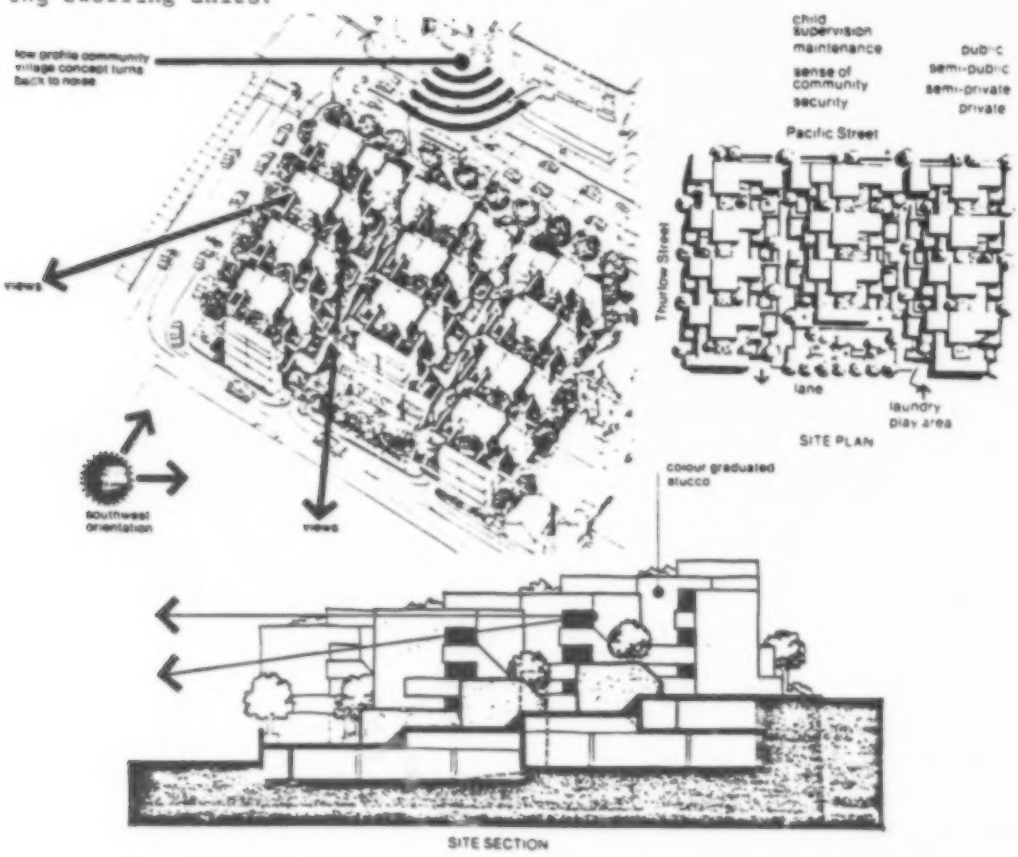
## Published Examples of Medium Density Family Housing

## VANCOUVER VILLAGE

Vancouver, British Columbia

This is a low-rise, wood frame, condominium housing project with a density of 271 units/ha. (110 units/acre). The interesting features of this project, other than the high density achieved, are the unit plans and the site planning. The basic plan is an L-shaped unit with the living room and bedrooms looking onto a court. Floor areas have been kept to a minimum by eliminating hallways and minimizing room sizes. A minimum amount of glass is used in each unit for energy efficiency and windows are sheltered, for visual privacy. Windows are grouped around the private court, however, to create the feeling of generous glass proportions.

In site planning, a hierarchy of public and private spaces has been provided for individual identity and privacy. As the section shows, the units step down a gently sloping site over a parking garage. Access to the units is via walkways over the parkade roof to lower unit private terraces, and by stairs to upper units. Two drawbacks from such a high density are smaller dwelling units and overview problems from neighboring dwelling units.



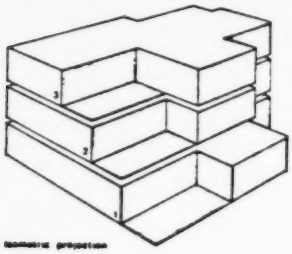

SITE SECTION

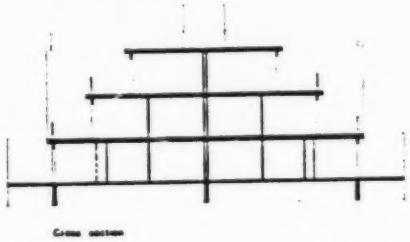
MEDIUM DENSITY HOUSING STUDY

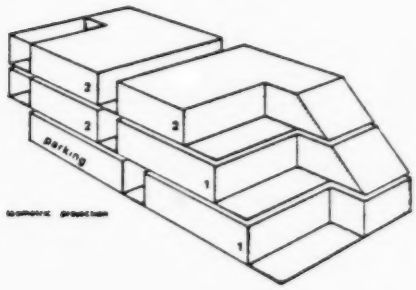
Canada Mortgage and Housing Corporation

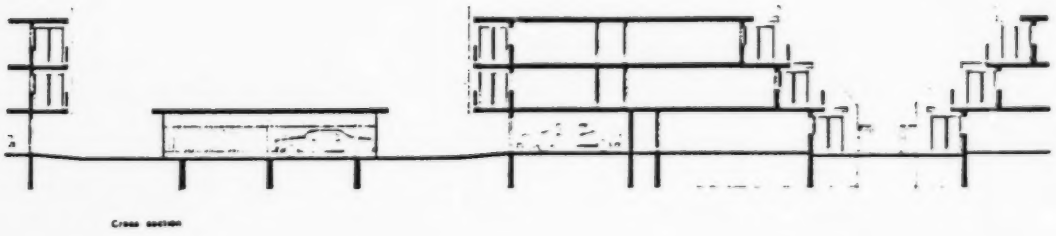
This publication has a series of examples of terraced and stacked row-housing. We illustrate here several examples relevant to this study.

The two examples of terraced housing illustrated below are three-storey buildings with apartment-like staircases to the dwelling units. The upper dwelling units are successively reduced in size to provide roof terraces over lower units. Adaptations can be made using this generic form. For example, a parking structure could be added below the buildings, thus freeing land from on-grade parking and effectively increasing densities.



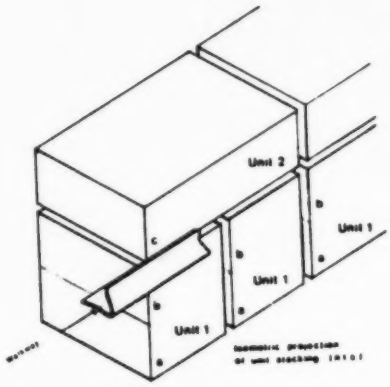


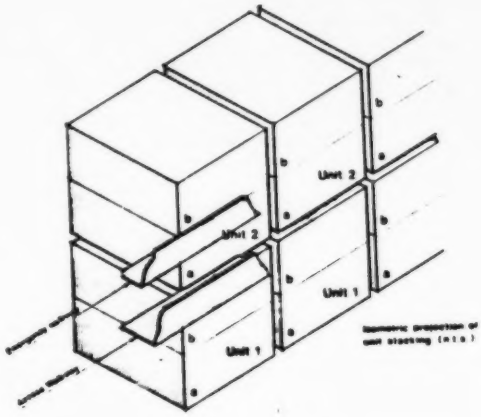


Another generic form reviewed is stacked row-housing.

The stacked row-housing designs illustrated here are comprised of combinations of one-storey dwelling units stacked one above the other. The upper dwelling units are served by exterior walkways with access stairs at either end. Although providing higher densities, the major drawbacks of this type of housing are poor access and lack of private outdoor living space for an upper dwelling unit. For family oriented housing, a balcony is not really adequate to satisfy the needs of the occupants.

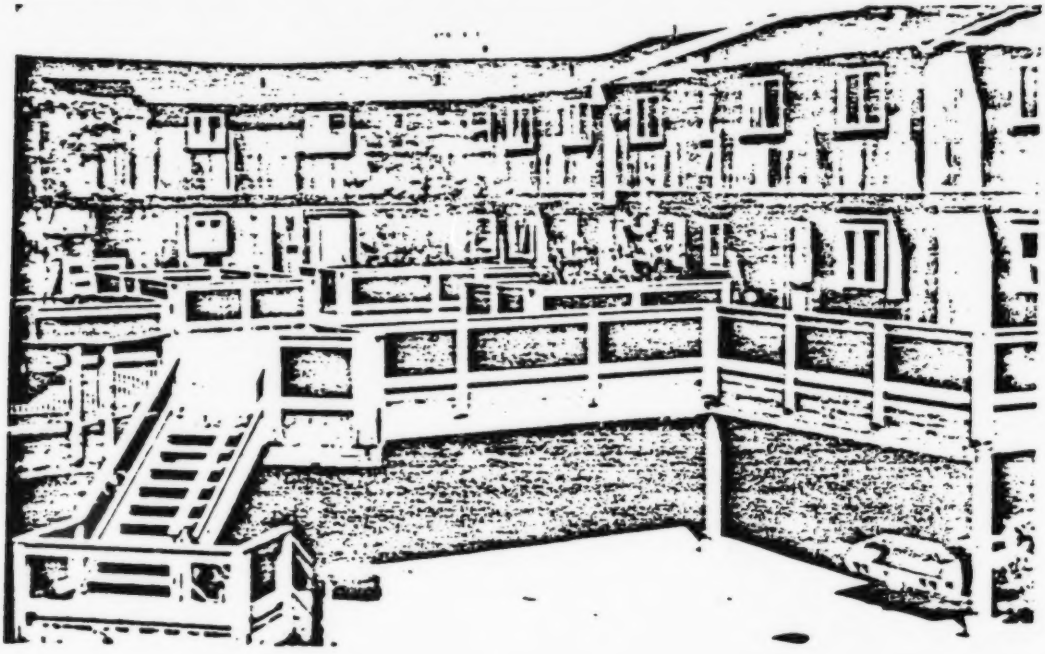


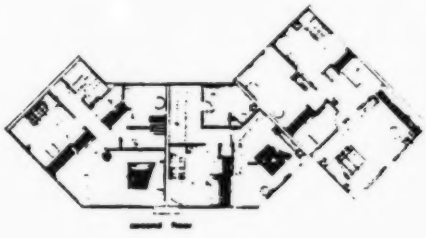
TREE TOPS

Mississauga, Ontario

Although not an example of medium density, multiple family housing, this townhouse project is included for its solution to parking. The three storey dwelling units have their main entrance at the mid-level from a wooden deck which covers the parking stalls below. A service entrance is also provided from the parking into the lower level of each unit.



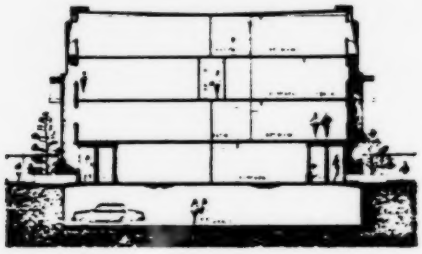
This design thus provides a stacking of open space over parking, as opposed to stacked units. It necessitates greater vertical circulation within the unit. There is also a considerable expense in the wood deck and the results do not provide a particularly attractive pedestrian common area, partly because of the overview of the driveways below.



VILLAS OF MORNING SIDE

Toronto, Ontario

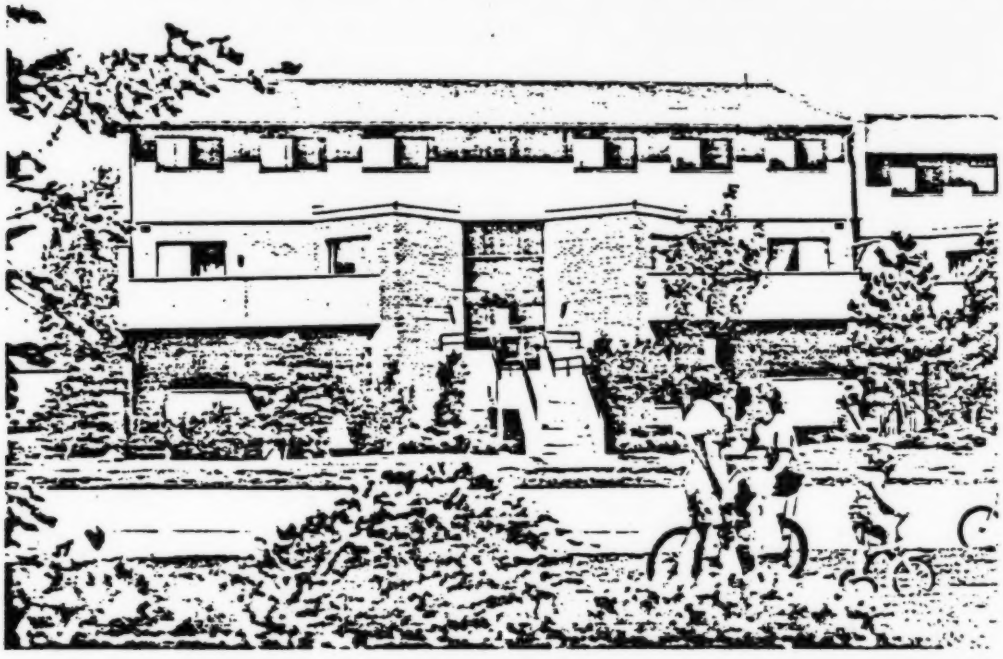
This project illustrates stacked row-housing over a one-storey, below grade, resident parkade. Each dwelling unit is two storeys, with access to the upper units via an apartment-style, interior corridor on the third floor. This is a drawback for family-oriented housing as is the narrow balcony of the upper units. Although the exteriors are well articulated, there does seem to be a lack of unit identity.

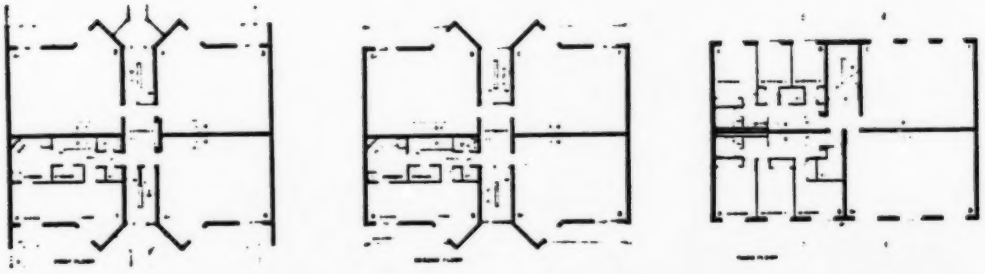


MILLWAY GATE

Mississauga, Ontario

This example of stacked row-housing again utilizes two storey units, but with more direct access to units. While architecturally pleasing and well landscaped, it seems to provide less than ideal private, outdoor living area in upper units for family oriented medium density housing. Lower units have a sunken terrace. Attempts have been made to provide unit identity through articulation of the exterior facades. However, this is negated by the fact that, once again, access to the individual dwelling unit is through a common, apartment-style entry and stairway.





URANIUM CITY APARTMENTS

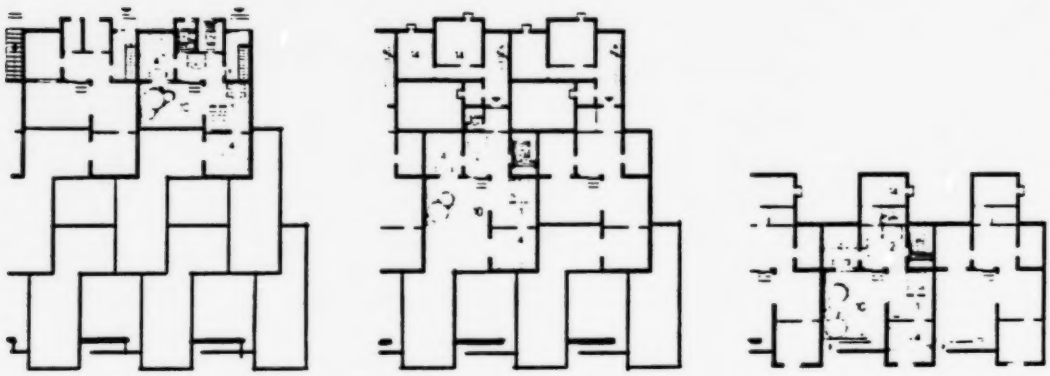
Uranium City, Saskatchewan

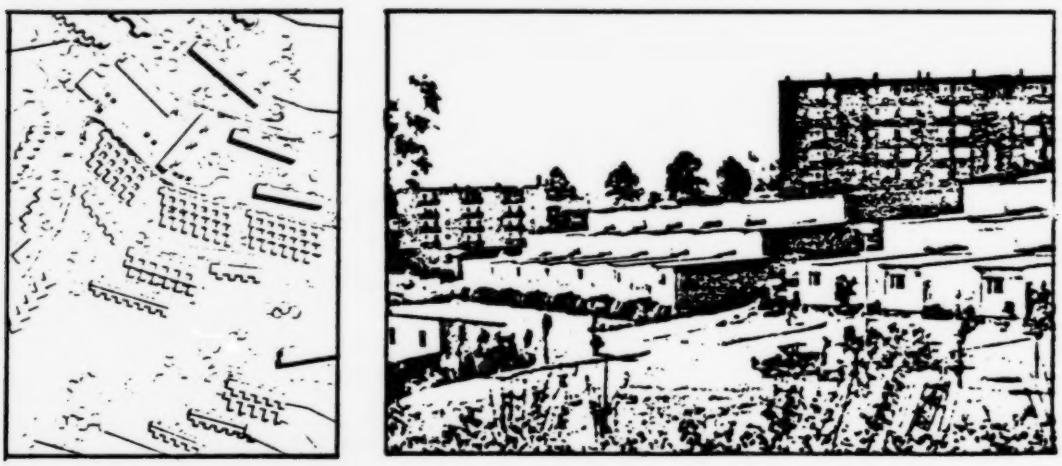
This is another example of stacked row-housing. It is not, however, suited to family oriented housing since there is limited private amenity space provided to the upper units. The outside corridor on the third level provides very little individual unit identity. Further, there is no private transition zone between the public circulation and the front door. However, the residential form, as shown in the section, has potential for multiple family housing. The lack of individual unit identity mentioned could be alleviated through more articulation of the facades.

## Uo PELWEISE-MIXSIEPEN HOUSING ESTATE

Remscheid, Germany

Of particular interest in this housing project are the court houses. They are terraced and stacked in such a way that they achieve excellent sunlight and view conditions, yet density is very high for a low-rise scheme. Depending on the topographical conditions, the dwelling units are arranged in single, double or triple rows. This type of multiple family housing may be well suited to prairie conditions.

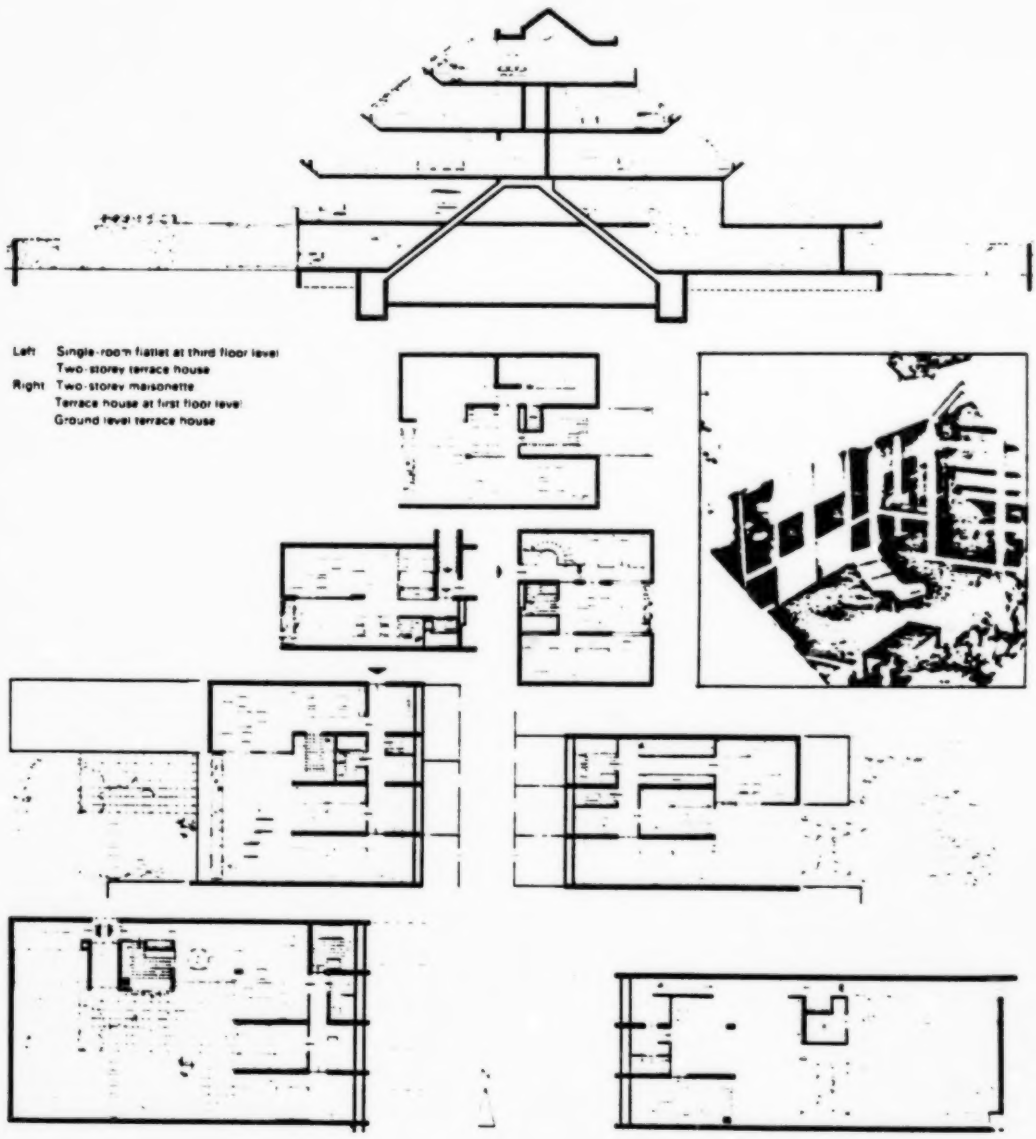




## NEUGEREUT TERRACED HOUSES

**Stuttgart, Germany**

Often referred to as a "housing hill", this terraced housing project combines a number of different dwelling unit types in a single building which, in its core, provides space for parking, amenity areas and shops. The terracing allows occupants to enjoy sunlit, private outdoor living areas while maintaining an excellent degree of visual privacy. Dwelling unit floor areas are relatively ample. Being five storeys in height, the design must be of non-combustible construction.


Left Single-room flatlet at third floor level
Two-storey terrace house
Right Two-storey maisonette
Terrace house at first floor level
Ground level terrace house

# Appendix D:

## Developer Questionnaires

Developer Interview Questionnaire - MACLAB ENTERPRISES LTD.

(1) Design Goals

Do you agree with the design goals listed? Yes x No ___
Do you agree with their relative weighting? Yes x No ___
Are there other design goals you feel are important and if so, how would you weigh them? Visual image of the project is important. As people approach, do they get a good impression.

(2) Evaluation of Design Solutions

How would you evaluate the designs, comparing them to typical RA-7 density development, in the following areas:

| | Site A Surface Parking | Site B Underground Parking |
|---|---|---|
| a) Siting Issues | | |
| 1. Individual Unit Identity | better | better |
| 2. Front Entrances | much better | much better |
| 3. Parking and access to unit | | |
| - for occupants | better | much better |
| - for visitors | better | better |
| 4. Common Open Area | subject to site layout | same |
| b) Unit Designs | | |
| 5. Private Outdoor Space | big asset | big asset |
| 6. Privacy | | |
| - acoustic - interior | fewer neighbors | fewer neighbors |
| - exterior | likely better | likely better |
| - visual | no comment | no comment |
| 7. Sunlight in Unit | | |
| - orientations of units | multiple orientations are an advantage. | |
| - rooms without windows | comparable | comparable |

c) General reaction to designs and specific recommendations. Reaction is good; would try to reduce regimentation of Site "A" to improve visual image.

d) As a final test of marketability of the designs, do you agree with the estimated rental levels and if not, what would your estimate be? Rents are probably on the low side. For the walk-up apartment rents in the Hermitage project in Edmonton would likely be $395 for a 2 bedroom and $485 for a 3 bedroom apartment. For Site "A", the lower 2 bedroom should likely be $419.

.....2

(3) Financial Evaluation

a) Are the estimates of capital and operating costs realistic? Yes x No ____

What changes would you recommend? However, the maintenance fee of $1,850 may be high.

b) Is the cash flow analysis realistic? Yes x No ____
Comments Agreed that it would be more instructive to exclude land and ascribe the residual value to it.

c) What conclusion do you reach in comparing the financial viability of the proposed designs with more conventional RA7 density development?
In bad times, you will have more units occupied in either of the proposed schemes as compared to a walk-up apartment. It is felt that the criteria listed are important to the majority of people and not just families.

(4) Conclusions

a) Are there any other comments you would make about the designs or financial analysis?

b) Would you consider developing either of the proposed designs?

Site A Yes x* No ____

Site B Yes ____ No ____

* subject to three things:
- the site plan being a little less regimented.
- inclusion of an on-site tot-lot.
- a practical solution to the construction of the upper unit roof deck.

Developer Interview Questionnaire - IMPERIAL GROUP LTD.

(1) Design Goals

Do you agree with the design goals listed? Yes x No ___
Do you agree with their relative weighting? Yes x No ___
Are there other design goals you feel are important and if so, how would you weigh them? The street identity is much preferred, subject to having security. The solution is good security hardware.

(2) Evaluation of Design Solutions

How would you evaluate the designs, comparing them to typical RA-7 density development, in the following areas:

| | Site A Surface Parking | Site B Underground Parking |
|---|---|---|
| a) Siting Issues | | |
| 1. Individual Unit Identity | good | good |
| 2. Front Entrances | good | good |
| 3. Parking and access to unit | | |
| - for occupants | good | very good |
| - for visitors | good | good |
| 4. Common Open Area | acceptable | good |
| b) Unit Designs | | |
| 5. Private Outdoor Space | very good | very good |
| 6. Privacy | | |
| - acoustic - interior | better than apartment | |
| - exterior | better on lower level. | |
| - visual | good if upper yard overview of lower yard is limited | |
| 7. Sunlight in Unit | | |
| - orientations of units | better in lower unit | |
| - rooms without windows | better in lower unit | |

c) General reaction to designs and specific recommendations. Good designs, subject to 1) the long stair to 2nd level would be better if turned at a landing i.e. Imperial coach homes 2) Upper deck over lower unit technically solved.

d) As a final test of marketability of the designs, do you agree with the estimated rental levels and if not, what would your estimate be? Site A & B 2 bedroom units should be $450-$500 and 3 bedrooms at $500-$550; walk-up apartment would be $400 for a 2 bedroom and $425 for a 3 bedroom (see also item (5) on Page 2).

.....2

(3) Financial Evaluation

a) Are the estimates of capital and operating costs realistic? Yes x No ____

What changes would you recommend? ____

b) Is the cash flow analysis realistic? Yes ____ No ____

Comments1)Change rental factors; 2) Use 5% vacancy factor because at an 8% factor, the validity of building is very questionable; 3) Soft costs, including the carrying costs during rent-up, would be about 25% of capital cost

c) What conclusion do you reach in comparing the financial viability of the proposed designs with more conventional RA7 density development? Scheme "A" looks attractive as it is competitive economically and will have a lower vacancy factor in a tough market. Given a choice, people will prefer these units and will pay a premium for them over a walk-up in the same location/market.

(4) Conclusions

a) Are there any other comments you would make about the designs or financial analysis? ____

b) Would you consider developing either of the proposed designs?

Site A Yes x No ____

Site B Yes ____ No ____

(5) Additional Notes:

A basement bedroom as a third bedroom isn't likely worth $50/month extra but as a spare room, tenants might pay $25/month extra. A rent premium is practical for a finished basement play area.

Developer Interview Questionnaire - TRIPLE FIVE CORPORATION

(1) Design Goals

Do you agree with the design goals listed? Yes X* No ___
Do you agree with their relative weighting? Yes X** No ___
Are there other design goals you feel are important and if so, how would you weigh them? * Experience is orientation doesn't affect rents.
** Regarding private outdoor space, experience at Hillcrest Place was that upper private deck (Type 4) was at least as acceptable as the lower patio (Type 3 yard)-(see footnote).

(2) Evaluation of Design Solutions

How would you evaluate the designs, comparing them to typical RA-7 density development, in the following areas:

| | Site A Surface Parking | Site B Underground Parking |
|---|---|---|
| a) Siting Issues | | |
| 1. Individual Unit Identity | Better | Better |
| 2. Front Entrances | Better | Better |
| 3. Parking and access to unit | | |
| - for occupants | Very Good | Very Good for lower units. |
| - for visitors | Very Good | Inconvenient |
| 4. Common Open Area | Should be on-site (don't maximize density) | Good |
| b) Unit Designs | | |
| 5. Private Outdoor Space | Very Good | Very Good |
| 6. Privacy | | |
| - acoustic - interior | Comparable | Ditto |
| - exterior | No Comment | Ditto |
| - visual | Better | Better |
| 7. Sunlight in Unit | | |
| - orientations of units | See comment in Item (1) | |
| - rooms without windows | Upper units with kitchen window, very attractive. | |

c) General reaction to designs and specific recommendations. Positive reaction - design goals generally well satisfied.

d) As a final test of marketability of the designs, do you agree with the estimated rental levels and if not, what would your estimate be? For 2 bedrooms in Site "A" and "B", $500; for 3 bedrooms, $550; for walk-up apartments, $390-$400 for 2 bedroom and $500 for a 3 bedroom of 1,000 sq. ft. (West Edmonton Village gets $525-$500 for a 1,200 sq. ft. 3 bedroom unit).

.....2 Footnote: Lower unit was also darker and had a small patio. Further, the upper unit was two storeys, which is more popular.

(3) Financial Evaluation

a) Are the estimates of capital and operating costs realistic? Yes ____ No X

What changes would you recommend? Capital costs are realistic; operating costs should be in the order of $1,200/mo. plus $300/mo. for the underground garage.

b) Is the cash flow analysis realistic? Yes ____ No X

Comments I would use a 5% vacancy factor and soft costs of $3,600-$4,000 per unit (10% of capital costs).

c) What conclusion do you reach in comparing the financial viability of the proposed designs with more conventional RA7 density development?

The Site "A" design would seem to be pretty competitive with conventional development. To properly compare these, though, one should be building comparable sized projects (i.e. walk-ups at 24 units x 3 buildings).

(4) Conclusions

a) Are there any other comments you would make about the designs or financial analysis? It is a worthwhile concept.

b) Would you consider developing either of the proposed designs?

Site A Yes X No ____

Site B Yes ____ No ____

Developer Interview Questionnaire - ALLDRITT DEVELOPMENT LIMITED

(1) Design Goals

Do you agree with the design goals listed? Yes X No ____
Do you agree with their relative weighting? Yes X No ____
Are there other design goals you feel are important and if so, how would you weigh them? ____

(2) Evaluation of Design Solutions

How would you evaluate the designs, comparing them to typical RA-7 density development, in the following areas:

| | Site A Surface Parking | Site B Underground Parking |
|---|---|---|
| a) Siting Issues | | |
| 1. Individual Unit Identity | Good | Good |
| 2. Front Entrances | Much Better | Muck Better |
| 3. Parking and access to unit | | |
| - for occupants | Very Good | Access to upper unit too long |
| - for visitors | Very Good | Okay |
| 4. Common Open Area | Tight | Acceptable |
| b) Unit Designs | | |
| 5. Private Outdoor Space | Very Good | Very Good |
| 6. Privacy | | |
| - acoustic - interior | Comparable | Ditto |
| - exterior | No Comment | Ditto |
| - visual | Better | Better |
| 7. Sunlight in Unit | | |
| - orientations of units | Good | Good |
| - rooms without windows | Upper units nice and bright. | |

c) General reaction to designs and specific recommendations. Favorable reaction.

d) As a final test of marketability of the designs, do you agree with the estimated rental levels and if not, what would your estimate be? Walk-ups rent for $370-$390 for a 1 bedroom (750 sq. ft.), $420-$440 for a 2 bedroom (860 sq. ft.) and $470-$490 for a 3 bedroom (1,025 sq. ft.); Site "A" and "B" would rent a little higher than shown.

.....2

(3) Financial Evaluation

a) Are the estimates of capital and operating costs realistic? Yes X No ____

What changes would you recommend? Operating expenses would normally be 1/3 of revenue but the numbers shown are reasonable for today's situation.

b) Is the cash flow analysis realistic? Yes ____ No X

Comments Rents need to change and soft costs should be doubled and include cost of rent-up.

c) What conclusion do you reach in comparing the financial viability of the proposed designs with more conventional RA7 density development?
Site "A" appears viable; Site "B" only works when land values are high.

(4) Conclusions

a) Are there any other comments you would make about the designs or financial analysis?

b) Would you consider developing either of the proposed designs?

Site A Yes X No ____

Site B Yes ____ No ____

Developer Interview Questionnaire - URBAN MANAGEMENT LTD.

(1) Design Goals

Do you agree with the design goals listed? Yes x No ____
Do you agree with their relative weighting? Yes x No ____
Are there other design goals you feel are important and if so, how would you weigh them? ____

(2) Evaluation of Design Solutions

How would you evaluate the designs, comparing them to typical RA-7 density development, in the following areas:

| | Site A Surface Parking | Site B Underground Parking |
|---|---|---|
| a) Siting Issues | | |
| 1. Individual Unit Identity | good | good |
| 2. Front Entrances | very good | very good |
| 3. Parking and access to unit | | |
| - for occupants | good | very good |
| - for visitors | good | satisfactory |
| 4. Common Open Area | park adjacent is good. | good |
| b) Unit Designs | | |
| 5. Private Outdoor Space | very good | very good |
| 6. Privacy | higher % of top | |
| - acoustic - interior | floor units better | ditto |
| - exterior | more contained | more contained |
| - visual | excellent | excellent |
| 7. Sunlight in Unit | dual orientation | |
| - orientations of units | good | ditto |
| - rooms without windows | upper units have kitchen with window. | ditto |

c) General reaction to designs and specific recommendations. ____

favorable

d) As a final test of marketability of the designs, do you agree with the estimated rental levels and if not, what would your estimate be? Suggest Site "A" and "B" 2 bedroom at $450 and 3 bedroom at $499; walk-up apartment at sizes shown - 2 bedroom at $375-$400 and 3 bedroom $450-$475. Normally apartments are smaller, though, with 2 bedroom at 750-800 sq. ft. and 3 bedroom at 850-950 sq. ft.

.....2

(3) Financial Evaluation

a) Are the estimates of capital and operating costs realistic? Yes x No ____

What changes would you recommend? _____

b) Is the cash flow analysis realistic? Yes ____ No ____

Comments amend rental revenues

c) What conclusion do you reach in comparing the financial viability of the proposed designs with more conventional RA7 density development?

As a general rule, townhouses are preferred to apartments and, as these are more comparable to townhouses, they are definitely preferable to walk-up apartments.

(4) Conclusions

a) Are there any other comments you would make about the designs or financial analysis? _____

b) Would you consider developing either of the proposed designs?

Site A Yes x No ____

Site B Yes ? No ____

INNOVATIVE MEDIUM DENSITY FAMILY HOUSING STUDY
INTERVIEW WITH PROPERTY MANAGERS - URBAN MANAGEMENT LTD.

February 20, 1985

The following are the preferences people expressed when shopping for multiple accommodation. The property manager offering these comments were not aware of our stated design goals when they provided this information. We have grouped their comments under our main objectives.

A. Individual Unit Identity

- Walk-up apartments are the least desired form of accommodation.
- Exterior variation in the units is more attractive; a box is least desirable.
- Materials in order of preference are brick, cedar siding and stucco.
- Curb appeal is important to a prospective tenant; people want their friends to think that they live in an attractive place with as much individual identity as possible.

B. Private Front Entrance

- Privacy is a big thing; the interior should be screened from the entry; privacy should be maintained between the entrance and yard.
- Exterior stairs are acceptable; people only like to go up one flight at a time outside.

C. Convenient Parking

- People need two stalls per unit today, as most families and couples have two cars.
- Underground heated parking is preferred; tenants will pay $20 to $30 per month extra for this amenity.
- Exterior tenant stalls have to be energized; people will pay $10 per month for this.
- Parking close to the unit is preferred.
- Convenient visitor parking is very important.
- Good parking is more important than a private yard, likely because it is a year-round necessity, whereas a yard is only used part of the year.

D. Private and Shared Outdoor Space

- A private yard is preferred to an open public area or balcony.
- Everyone wants to barbeque and a balcony does not permit this, for reasons of fire safety.
- Yard should be fenced in for security with small children and privacy.
- People like to have a place to grow some plants of their own.
- People like sliding doors and screen doors both for access outside and for fresh air in the summer.

- Families look for an open public area with a playground, preferably fenced in.

E. Privacy

- Sound control is a very important feature; lack of it is often the cause of people moving out of a project.
- Visual privacy is very important, particularly to women; for this reason, ground level apartments are least popular.
- All meters should be outside the building so that meter readers do not have to enter the unit; women are very sensitive about security.

F. Sunlight/Orientation

- Orientation is frequently a determining factor in the final selection of a rental unit.
- A lot of people like growing plants indoors and look for a sunny orientation.
- North facing units are least popular; they usually have to be rented at a discount.

G. Other Factors Mentioned

- Not only families want two and three bedroom units; many single people want them, too.
- A two storey unit is usually more popular with families than a one-storey unit.
- People often fix-up basements as play areas for children; a finished play area in a basement would be an asset.
- Other amenities, in order of preference, are a dishwasher, fireplace, frost-free fridge and a wet bar; air conditioning is not important except in a luxury market.
- Tenants want good garbage storage, which is as convenient to their front door as possible. If a bin overloads, they won't walk to the next bin, but will simply throw their garbage on the ground beside the full bin.